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Cover: A Karamajong mother and child were photographed by Dr. Gerald S. Foster while he was in Kampala, Uganda, working with a program at the Makarere Medical School under the auspices of the Massachusetts General Hospital. His article starts on p. 25. Other articles on international medicine begin on p. 14.

Credits: p. 10, Harvard News Office; p. 13, Bradford F. Herzog; pp. 16-19, United Nations; pp. 20-24, Dr. Charles A. Janeway; pp. 25-28, Dr. Gerald S. Foster; pp. 29-30, Mr. Rafael Amaro; p. 31, courtesy of Dr. Guillermo Herrera; pp. 33, 35, Dr. Marjorie LeMay; pp. 37-39, courtesy of Dr. Samuel B. Kirkwood; p. 42, David Bishai; p. 47, courtesy of Dr. Lloyd H. Smith; p. 49, courtesy of Dr. Edwin H. Cassem. All maps, Joanne Dougherty.

HOW MUCH PRODUCTIVE IN THE

Approximately 70% of deaths caused by acute myocardial infarction take place before the patient reaches the hospital. Delay in obtaining medical care is cited as a major cause for this high incidence, and denial may contribute to this delay.

This denial in the cardiac patient is a more obvious aspect of anxiety that is *not* productive. There are others; for example, the previously self-reliant patient who, on finding himself suddenly dependent, reacts with hostility, refuses to cooperate and thus causes serious problems during the intensive care and early rehabilitative stages of his hospitalization.

Even more common, perhaps, is the postcoronary patient who fears a return to work and other everyday activities. The basis for this "cardiac neurosis" is the patient's notion that activity itself is life-threatening.²

When anxiety is productive

A certain amount of anxiety in the cardiac patient is both realistic and normal. And in some patients it can be productive. In the acute phase of the disease, it can prompt the patient to seek immediate medical attention. Later, it can encourage cooperation during hospitalization.

In the rehabilitative phase, productive anxiety can help a patient adhere to a possibly difficult medical regimen: to eat properly, to exercise in a manner compatible with his capacities, to alter habits such as smoking. Productive anxiety can hasten recovery—even prolong life.

Channeling anxiety into productive areas

Because unresolved anxiety can lead to



psychologic defense mechanisms, such as denial, which may interfere with treatment of the patient, open and ample discussion between physician and patient must be maintained and encouraged. In this way, the patient can verbalize his fears and the physician can help alleviate the patient's anxiety through reassurance and counseling.

Librium (chlordiazepoxide HCl): often an excellent adjunct to your reassurance and counseling

Although the physician may attempt to help the cardiac patient cope with varied emotional problems through reassurance and counseling,

ANXIETY IS CARDIAC PATIENT?

excessive anxiety may persist. In this case, you may wish to consider the use of Librium adjunctively.

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References: 1. Zohman BL: Geriatrics 28:110-119, Feb 1973. 2. Keegan DL: Can Fam Physician 19(3):66-68, Mar 1973.

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Indications: Relief of anxiety and tension occurring alone or accompanying various disease states.

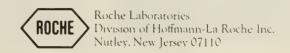
Contraindications: Patients with known hypersensitivity to the drug.

Warnings: Caution patients about possible combined effects with alcohol and other CNS depressants. As with all CNS-acting drugs, caution patients against hazardous occupations requiring complete mental alertness (e.g., operating machinery, driving). Though physical and psychological dependence have rarely been reported on recommended doses, use caution in administering to addiction-prone individuals or those who might increase dosage; withdrawal symptoms (including convulsions), following discontinuation of the drug and similar to those seen with barbiturates, have been reported. Use of any drug in pregnancy, lactation, or in women of childbearing age requires that its potential benefits be weighed against its possible hazards.

Precautions: In the elderly and debilitated, and in children over six, limit to smallest effective dosage (initially 10 mg or less per day) to preclude ataxia or oversedation, increasing gradually as needed and tolerated. Not recommended in children under six. Though generally not recommended, if combination therapy with other psychotropics seems indicated, carefully consider individual pharmacologic effects, particularly in use of potentiating drugs such as MAO inhibitors and phenothiazines. Observe usual precautions in presence of impaired renal or hepatic function. Paradoxical reactions (e.g., excitement, stimulation and acute rage) have been reported in psychiatric patients and hyperactive aggressive children. Employ usual precautions in treatment of anxiety states with evidence of impending depression; suicidal tendencies may be present and protective measures necessary. Variable effects on blood coagulation have been reported very rarely in patients receiving the drug and oral anticoagulants; causal relationship has not been established clinically.

Adverse Reactions: Drowsiness, ataxia and confusion may occur, especially in the elderly and debilitated. These are reversible in most instances by proper dosage adjustment, but are also occasionally observed at the lower dosage ranges. In a few instances syncope has been reported. Also encountered are isolated instances of skin eruptions, edema, minor menstrual irregularities, nausea and constipation, extrapyramidal symptoms, increased and decreased libido — all infrequent and generally controlled with dosage reduction; changes in EEG patterns (low-voltage fast activity) may appear during and after treatment; blood dyscrasias (including agranulocytosis), jaundice and hepatic dysfunction have been reported occasionally, making periodic blood counts and liver function tests advisable during protracted therapy.

Supplied: Librium* Capsules containing 5 mg, 10 mg or 25 mg chlordiazepoxide HCl. Libritabs* Tablets containing 5 mg, 10 mg or 25 mg chlordiazepoxide.



Overview

Goldman Appointed First Finland Professor

Peter Goldman, M.D., director of the division of clinical pharmacology in the department of pharmacology at HMS, has been named the first Maxwell Finland Professor of Clinical Pharmacology.

Dr. Goldman is also chief of the division of clinical pharmacology at the Children's Hospital, a physician at the Beth Israel Hospital, a consultant in clinical pharmacology at the Sidney Farber Cancer Center, and a consultant in medicine at the Peter Bent Brigham Hospital. Before joining the HMS faculty in 1972, he was senior investigator in the Arthritis and Rheumatism Branch of the National Institutes of Health for nine years.

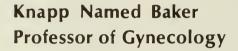
Among Dr. Goldman's contributions to his field, he played a major role in research at the NIH which established the function of acyl carrier protein (ACP) during the formation of long-chain fatty acids. With his colleagues, Dr. Goldman has also succeeded in isolating enzymes which have great specificity in severing chemical bonds in many biological compounds, including clinically useful drugs. The latter has particular value in the development of

Dr. Goldman



specific assays, and hopefully in the treatment of patients suffering from intoxication with these compounds. One of the foci of his current research is the uncovering of early clinical evidence of drug toxicity in humans.

The new chair honors Maxwell Finland '26, the George Richards Minot Professor of Medicine, Emeritus at HMS. Dean Robert H. Ebert noted that several years ago, in response to the growing number of patients having drug reactions, Dr. Finland had recognized the need for a coordinated program of clinical pharmacology and clinical pharmacy throughout Harvard and its teaching hospitals.



Robert C. Knapp, M.D. has been named the William H. Baker Professor of Gynecology at HMS and associate chief of staff and director of gynecology at the Boston Hospital for Women. He will work at the hospital's Parkway Division in Brookline, which was founded by Dr. William Baker a century ago.

Dr. Knapp was a member of the faculty of Cornell University School of Medicine from 1958 to 1970, attaining the rank of associate professor. During his last two years there, he also chaired the department of obstetrics and gynecology at Nassau County Medical Center. He came to Harvard in 1970 as associate professor of obstetrics and gynecology, serving simultaneously as associate chairman of the department of obstetrics and gynecology and director of gynecologic oncology at the Beth Israel Hospital.

In his more than forty papers, Dr. Knapp has dealt with a wide variety of problems in his field, including malignant diseases and pregnancy complicated by cardiac disease. His research at Harvard, in collaboration with Stanley Order, M.D., formerly of the Joint Center for Radiation Therapy, has focused on a murine model of ovarian cancer. Together they worked out the role of lymphatic obstruction and the formation of ascites. Their studies have



Dr. Knapp

demonstrated the therapeutic effectiveness of antibodies raised from tumor associated antigens — one of the few models of effective immunotherapy using antisera. In continuing this work, Dr. Knapp intends that its application soon will be brought to the clinical setting.

Carl W. Walter Fund To Aid Students

Walter Kidde and Company, Inc. of Clifton, New Jersey has announced its intention to establish the Carl W. Walter Fund for Financial Aid at the Harvard Medical School, thus honoring one of its directors and a member of the Faculty of Medicine. Dr. Carl W. Walter '32, clinical professor of surgery emeritus, has been connected with HMS continuously for the forty-three years since his graduation. Since July 1972 he has been director of the Alumni Fund. Dr. Walter is also a co-founder and current chairman of the board of Fenwal, Inc. in Ashland, Massachusetts.

In acknowledging the gift, Dean Robert H. Ebert commented, "Funds for financial aid are among the most productive resources available to Harvard, for they provide the essential support with which to aid qualified and deserving students through the long and costly process of medical education — to emerge, we may hope, with the intellectual and humane qualities that Carl Walter has combined so effectively in his own character."

HMS/MIT Project: New Tools for Doctors

A Biomedical Engineering Center for Clinical Instrumentation is being established by the Harvard-MIT Program in Health Sciences and Technology, with a grant from the National Institute of General Medical Sciences. Engineers and physicians will collaborate in the research and development of a new class of medical instrumentation, which will include in its design a microcomputer capable of making calculations and presenting patient data in a clinically useful form.

A Core Microprocessor Engineering Laboratory is being set up at MIT for research on design of the instruments, which will subsequently be evaluated clinically in the hospital setting. Collaborative groups drawn from MIT and the Beth Israel and Peter Bent Brigham Hospitals will do research, evaluation and testing of the instruments.

The Center's overall director will be Roger G. Mark '65, Ph.D., who is associate professor of electrical engineering in the MIT department of electrical engineering and computer science, and assistant professor of medicine at HMS, as well as director of the biomedical engineering division of the department of medicine at Beth Israel Hospital. Technical director will be Stephen K. Burns, senior research scientist in the Harvard-MIT Program in Health Sciences and Technology.

Sojourn in Africa

Harvard University technical assistance project is recruiting personnel for two years from summer, 1976, for teaching at the University Center for the Health Sciences, Yaounde, Cameroun.

Needed: Community physician to lead team of three.

Qualifications: Teaching, research and practice in rural health and community medicine, public health background, familiarity with developing countries and fluency in French.

Inquiries:

Charles A. Janeway, M.D. 300 Longwood Avenue Boston, Massachusetts 02115 Four goals have already been set for the Center's initial efforts at developing new instrumentation: 1) a computerized monitor for detection of irregular heartbeats; 2) techniques and equipment for diagnosis of causes of dizziness and disequilibrium; 3) instrumentation for collection and processing of respiratory function data, particularly for the study of dynamic events as seen in asthma; and 4) a probe for measurement of blood flow through tissues, as a means of monitoring the condition of patients during surgery.

Health Letter Informs Medical Consumers

"To provide timely and accurate health information for the general public" is the purpose of the new monthly *Harvard Medical School Health Letter* published by the department of continuing education, under the editorship of G. Timothy Johnson, M.D.

The publication is designed for distribution by companies, labor unions, and other organizations to their employees or members at a low group rate. Each Health Letter consists of an opening essay on a major health topic — such as heart attacks, breast cancer, or home treatment of common emergencies — followed by shorter items including comments on current medical news and announcements of new developments of importance to all medical consumers.

The Health Letter's advisory board is chaired by Stephen E. Goldfinger, M.D., who is associate dean of the faculty of medicine for continuing education, as well as associate professor of medicine at the Massachusetts General Hospital. Dr. G. Timothy Johnson, well known for his television program, House Call, is a clinical instructor in medicine at HMS.

Pharmacy Students Attend Classes at HMS

Interdisciplinary cooperation between pharmacy and medicine will be facilitated by a new fund in clinical pharmacology and clinical pharmacy at HMS. Peter Goldman, M.D., recently named the first Maxwell Finland Professor of Clinical Pharmacology at HMS, will oversee Harvard's contribution to a program in which candidates for the doctor of pharmacy at the Massachusetts College of Pharmacy are participating in courses at the Medical School.

The new fund was made possible through a gift from Joseph S. Lindemann, formerly associated with Cooper Laboratories, Inc., and now president of the Nestle-LeMur Company in New York. In recognition of his interest in the Medical School, the Alumni Council, at its October 3 meeting, elected Mr. Lindemann an associate member of the alumni association. The new program is intended to encourage the participation of pharmacists as members of the health team, and to ensure that they will have the necessary expertise in drug therapy, including medication compliance.

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MMHC Offers Family Planning Clinic

A unique program at the Massachusetts Mental Health Center has recently received special recognition. The Reproduction Counseling and Clinic, directed by Henry U. Grunebaum '52, associate clinical professor of psychiatry at HMS, was awarded a Certificate of Commendation by the American Psychiatric Association's Institute on Hospital and Community Psychiatry, held September 25 in Washington, D.C.

The Reproduction Counseling and Clinic and its associated clinics at the Westboro and Worcester State Hospitals embody the first efforts by an American mental hospital to offer family planning counseling and services as well as gynecological diagnosis to hospitalized psychiatric patients.

The impetus for opening the clinics came from an interview survey of twenty-one women inpatients at the MMHC. The women unanimously responded that they would welcome the opportunity to discuss family planning with a trained woman counselor. In addition, the study revealed that more than half of those interviewed had had one or more unwanted pregnancy, and many believed that the stress of unwanted children had contributed to their illness. The clinics' services may thus help to prevent future emotional problems.

The clinics provide voluntary counseling and services to all female admissions — many of whom are on day care or go home on weekends — and use only reversible methods of contraception. After a patient's discharge, they continue to offer ongoing support and needed gynecological service. Lowincome women — about eighty-five per cent on welfare — make up most of the three hundred patients seen at the clinics yearly.

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Surveying Harvard Medical School's Future

by President Derek C. Bok

At the first faculty meeting for the 1975-1976 academic year it was announced by Harvard University President Derek Bok that Robert H. Ebert will retire as dean of the Medical School in June 1977. In the following speech Mr. Bok outlines the direction he foresees for the Medical School in the next decade as well as announcing Dean Ebert's retirement. Dean Ebert's own remarks are also included.

My predecessors, on the whole, were inclined to remain rather silent on the mysteries of medical education. But there are strong reasons today for taking an active, sympathetic interest in the affairs of this School.

To begin with, the activities of the Medical School have become more closely intertwined with those of other parts of the University. The Harvard-MIT Program in Health Sciences and Technology involves the cooperation of several different faculties. The research of your biochemists and molecular biologists has been matched increasingly by similar interests within the Faculty of Arts and Sciences. National priorities in medical care have shifted to become more closely linked to the concerns of public health in preventive medicine and the planning and delivery of health services. Several faculties share a growing interest in the subject of health policy and administration. Since mine is the only office in the University with responsibilities that extend over all the faculties, these overlapping interests in health and medicine inevitably come to my attention.

In addition, it is clear that medical education has become a matter of great concern to public officials. More than any other faculty at Harvard, the activities of the Medical School are affected by federal appropriations. Government agencies have likewise taken action to regulate the process of fetal research and human experimentation. At this very moment, the Congress is considering measures relating to health manpower that could have important effects upon the nature of graduate training, the content of the curriculum, and the postgraduate careers of medical students. Since my office is ultimately responsible for relations with the government, I must try to learn enough to represent your interests effectively.



President Bok

But there is a final, simpler reason for my concern. The Medical School is a major part of this University and one of its great ornaments. No Harvard president could fulfill his responsibilities without taking a keen interest in the quality of the School and the welfare of its faculty and students.

Up to now, I have been chiefly concerned with academic appointments. Obviously, I cannot attempt to make a judgment on the professional qualifications of persons proposed for appointment or promotion; I can take an interest in the procedures that are used. Part of my concern has to do with maintaining a vigorous affirmative action program. But affirmative action is only part of a larger interest in making

certain that every effort is made in each appointment to identify the very best available candidate wherever he or she may be found. This is no easy matter. When a faculty makes only one or two appointments a year, it is natural to approach each search with the utmost care. Where dozens of appointments are made annually, there is a greater risk of occasional neglect. In the past few years, I believe that we have made some progress in tightening up our procedures. But I am still concerned with finding more reliable ways to evaluate teaching ability, as well as research. and to make more certain that search committees look outside, as well as within, the Medical School whenever it is feasible to do so.

Beyond the issue of appointment policies, I have several other interests to briefly share with you.

The first of these has to do with the basic sciences. In the past, as you know, different faculties in the University have tended to pursue their scientific interests without much regard to related endeavors elsewhere in the University. This policy was understandable, perhaps, in a period when money was readily available for scientific research. At present, however, we face the prospect of diminished resources for at least a generation. At the same time, the cost of doing biomedical research has continued to mount. I can assure you that my chief concern is not to eliminate programs in an intellectually destructive search for economy. Nor do I have any doubt of the need for a strong program of basic science within the Medical School. I merely suggest that our aspirations will inevitably be greater than the funds available to achieve them, so that it is appropriate to look at the biological sciences from a University-wide perspective in order to insure that we accomplish as much as we can in teaching and research with the resources at our command.

As you know, I have already written some of you for advice in this matter. In addition, Bob Ebert, Howard Hiatt and Henry Rosovsky have joined me in visiting three other campuses — Yale, Chicago and Washington at St. Louis — to study the organization of the biological sciences at these institutions.

Obviously, every university is unique and it is clear that we should not seek to emulate Chicago by creating a single division of biology, or combine the basic sciences in Cambridge and the Quadrangle in a manner similar to Washington University. Nor do I have any inclination to create a new layer of administration by appointing a vice president for the health or biological sciences. Our efforts will almost certainly be more modest. We will be seeking to provide a truly effective forum for representatives of all departments in the biological sciences to come together periodically to discuss their plans and needs in the areas of teaching, research, and new appointments and facilities. Only through such a forum can the deans receive the quidance they need to make wise decisions in the use of new endowments, the authorization of new appointments, and the imaginative use of the teaching resources of the University. Currently, we are in the process of putting our thoughts on paper so that all of the interested faculties can give us the benefit of their opinions before any final decisions are reached.

Another concern I have involves the quality of our educational programs. Every distinguished university must succeed in balancing the needs of research, teaching, academic administration and community service. An important role for the president and deans is to exert their influence where it is most needed to maintain a healthy balance between these several areas. In the Medical School, this obligation gives rise to two concerns. First of all, we must all be worried over the mounting burdens of administration, committee work, securing grants and attending the multitude of conferences and site visits that seem to accompany professional eminence in medicine. Gene Braunwald has written eloquently on the plight of the clinical department chairman. I fear that his concerns may be echoed — though perhaps to a lesser degree — in the lives of all professors. Unfortunately, I cannot present concrete proposals for reform. But I am concerned over the effect of these burdens on the ability of professors to succeed in their preeminent responsibilities for teaching and research. As a result, I can at least call attention to the problem and ask the dean and yourselves to consider how the issues involved can most effectively be explored.

My second concern has to do with the process of instruction. For twenty-five years the federal government has strongly encouraged the research activities of our leading medical schools. This policy has provided a great stimulus to the volume and quality of research by enlarging our faculty and

"It is clear that primary care will remain a major issue for health policy over the next generation and it is hazardous for any professional school that aspires to leadership to turn its back on one of the preeminent problems of its profession."

providing more ample facilities for scientific investigation. At the same time, these developments inevitably carry a risk that the teaching of medicine will be eclipsed by the prestige and importance attached to research.

For these reasons, I am most heartened by the decision of Dean Ebert to reconstitute the Curriculum Committee as a committee chiefly concerned with the quality of teaching. I hope that this committee will investigate such topics as the quality of the clinical clerkship and the possibility of making greater use of teaching by problem and discussion rather than by didactic lectures. I trust that it will explore the relative advantages and disadvantages of dividing

responsibility for the preclinical courses among so many faculty members. I also hope that it will bolster its efforts by acquiring data, not only by systematic student evaluation, but also by carrying out the type of research on the impact of education that we are conducting in other areas of the University.

Another issue that confronts the Medical School is what we should do about the concern for educating more primary-care physicians. I realize that there is much dispute over whether there really is a shortage of primary care and over what sort of physician should be responsible for providing such services. As a layman, my opinion on these matters is not worth a great deal. Yet I wonder whether the time has not come to consider these issues more explicitly, and to discuss more fully what the role of the School should be.

Several alternatives come to mind. At one extreme, one can imagine the Medical School making a clear commitment to the task of educating a large number of primary-care physicians. This is the alternative that appears to be favored by some Congressional leaders interested in health manpower problems. However, with all due respect to these legislators, I question whether this would be a wise course for Harvard to take. For one thing, it is doubtful whether we know enough about primary care or the role that primary medicine will eventually play in our evolving system of health care to make such a large-scale commitment. But there is an even stronger reason for urging caution. In the last analysis the educational priorities of a school must reflect its special strengths and Harvard's strengths lie much less in primary care than in the distinction of its research faculty and the existence of its great teaching hospitals devoted to higly specialized, acute care.

At the other extreme, the Medical School might decide that primary care should be left entirely to other schools which are less equipped to emphasize research and specialty care. This alternative has the virtue of recognizing the principal strengths and interests of the faculty, avoiding the dispersal of our energies over too large a terrain. But there are dangers in this approach as well. As you continue to diversify your student body, and as the attitudes of

your students change to reflect prevailing social concerns, a significant fraction of each entering class will inevitably wish to pursue careers in primary care: and this situation will doubtless continue unless you radically alter your admissions policies. Under these circumstances, it will be awkward at best to ignore the aspirations of a segment of those whom you have chosen to teach. In addition, it is clear that primary care will remain a major issue for health policy over the next generation and it is hazardous for any professional school that aspires to leadership to turn its back on one of the preeminent problems of its profession.

Between the two extreme alternatives lies the possibility of an intermediate position that may better correspond to the strengths and responsibilities of the Medical School, For example, one can imagine making an explicit effort to define the responsibilities and the training of primary-care physicians in ways that not only serve society's needs but provide careers sufficiently challenging to attract able students. One can also imagine taking responsibility for training those who will ultimately teach in the primary-care programs of other schools. And one can conceive of the creation of model programs of primary-care education and research that will not only accommodate your students but will serve as examples to other institutions as well.

Although I am aware of the initiatives already taken by the School, I would still suggest that the proper role of primary care and its organizational status within the School raise significant questions that may require more focused attention than they have heretofore received. Needless to say, I lack the professional competence to express a judgment on these questions; the ultimate answers must be for you to decide.

My final concern has to do with the dangers that accompany increasing government regulation of our medical schools. As you know, the federal government already accounts for more than sixty per cent of the Medical School budget. Government regulations now extend to aspects of research, admissions, and the hiring of faculty and staff. Health manpower proposals under consideration by the Congress would influence portions of

the curriculum, limit the number of residency slots, and subject medical students to a *de fact*o doctors' draft to serve in medically underserved areas.

There are grave risks that much federal regulation will be burdensome and even unwise. For example, I am most concerned by the growing tendency to smother affirmative action in a confusing maze of red tape and bureaucratic requirements. I also doubt that measures that compel medical students to spend six weeks in an outreach program, or serve two years in a remote site, will ultimately do much to redistribute physicians unless much more ambitious steps are taken to improve the nature and quality of practice in these underserved areas.

Nevertheless, it is impossible to argue that the federal government should keep hands off medical education. The volume of federal support for medical schools is so large, and the importance of health to society so great, that federal officials must inevitably wish to make certain that the work of the medical schools conforms to the public interest. Under these circumstances, it is clearly in the interest of the medical schools to cooperative actively with the government in helping to devise sensible regulations.

At present, I do not feel that we are making the contribution needed to protect our interests or those of the public. For example, I have been most disturbed by the quality of the materials presented by the medical schools on the subject of health manpower. The problems involved have been apparent for over a decade. Nevertheless, the AAMC still seems unable to do more than react at the eleventh hour to Congressional proposals with hastily prepared materials scarcely designed to impress a thoughtful legislator.

There are several steps that the University administration can take to help improve upon this record. We can establish procedures to give early warning of government initiatives to regulate medical schools, and we can monitor the progress of these proposals through the processes of Congress and the Executive Branch. We can also help in approaching officials at appropriate times to make sure that they are fully aware of our views and arguments.

But these steps will be of little use if knowledgeable faculty members in the University do not participate in preparing thoughtful, detailed positions on the issues involved. Only with cooperation of this kind can we move beyond defensive special pleading and offer imaginative, constructive proposals that do justice to the problems which give rise to Congressional concern. While members of this faculty must help in this undertaking, we cannot obtain all the assistance we need from the Medical School alone. As a result, I have asked the deans of the School of Public Health and the School of Government. as well as your own dean, to advise me on how we can mobilize the full range of expert help we need to respond more constructively to the prospect of government intervention. And I am also hard at work to recommend changes in the structure of the Association of American Universities which will enable us to draw upon the assistance of other leading institutions as well.

In conclusion, I should like to make an announcement of special concern to all of you. After ten years of service, Bob Ebert has informed me that he would like to relinquish the deanship effective July 1, 1977. This is a very painful message for me to deliver, since there is no one in the administration of this University toward whom I feel more respect and affection. And I am sure you will join me in my gratitude for all he has done for Harvard and the Medical School.

Although many months will elapse before I need announce Bob's successor, I should like to make a few points clear. It is inevitable in a large faculty that rumors will circulate about the search for a new dean. I should like to caution you in the strongest terms against giving credit to such gossip. Let me also make clear that the choice of a new dean will represent one of the most important decisions I will make as president, and I intend to go about the search with the utmost care. I will continue to read as widely as possible about the problems confronting medical schools and medical education. I will consult with knowledgeable people outside the University. Above all, I shall take great pains to consult with this faculty. To be sure, I will not appoint a search committee to present me with a list of names from which to choose. That is not Harvard's tradition — and for good reason. It is

difficult to encompass all the important segments, interests, and views of such a large faculty within a single committee. More important, such a procedure can politicize the process of selection and will result all too often in doubtful compromises to achieve a consensus among differing points of view. Finally, there are various qualities in a dean that do not lie within the special competence of a faculty committee to judge yet are important to the welfare of the School — fiscal management, ad-

ministration, government and community relations, fund-raising and so forth.

At the same time, however, I will solicit the views of the faculty, commencing next winter, both by writing to all of you and by talking individually with a goodly number. I should add that any faculty member who wishes to speak with me on this issue should feel completely free to do so. Let me assure you that I will conduct the search with a mind open to every suggestion you may wish

to make. In turn, I hope that you will cooperate fully in advising me, for I cannot hope to make a wise decision without having the most candid and thoughtful suggestions that this faculty can provide.

Suggestions for a new dean are welcome from any Harvard Medical School alumnus/a. Communications should be forwarded to President Derek Bok at Massachusetts Hall, Cambridge. Massachusetts 02138.

After Twelve Years . . .

by Dean Robert H. Ebert

I thank the president for his thoughtful analysis of some of the problems which face the University in general and the Medical School in particular.

Let me turn now to the announcement of my plan to step down from the deanship in June 1977, and tell you briefly why I have made that decision. I decided early in my tenure as dean that I would not continue in that office till the age of mandatory retirement. In June 1977 I will be two months short of my sixty-third birthday so that obviously I could not continue much longer in office and meet that objective. I made the decision to leave the dean's office early for the very simple reason that I wished to do some other things before retirement. I will have been dean for twelve years in 1977 and that is long enough to provide some continuity in leadership for this great medical school. But there needs to be a balance between continuity and change. At this point in time I believe that the scale tips in favor of change, for new and vigorous leadership can only enhance the stature of the Harvard Medical School.

I have had the great good fortune to work with two presidents whom I both like and admire. Each has been a concerned friend of the Faculty of Medicine and each has contributed to the welfare of the Medical School. Each has pro"I will have been dean for twelve years in 1977... there needs to be a balance between continuity and change. At this point in time I believe that the scale tips in favor of change, for new and vigorous leadership can only enhance the stature of the Harvard Medical School."

vided me with the greatest latitude to do what I thought best for the School, while at the same time playing the role of friendly critic.

I probably know Derek Bok better than anyone else in this room, for he has been a valued colleague and good friend since his first days as dean of the Law School. I know his style, his remarkable analytical abilities, and the depth of his perception. I have never know him to make a superficial judgment or take an impulsive action. He gathers all of the available evidence, analyzes it extensively and only then



Dean Ebert

makes a decision. This faculty can be assured that he will approach the problem of my successor in this same thoughtful fashion and that before making a decision, he will have listened carefully to all of the evidence and will have sifted the important from the trivial. His final choice will be based on the important issues to be faced by the Medical School and the qualities of leadership needed to solve the problems of the next decade. My greatest regret in leaving office will be that I will no longer have the privilege of working closely with our distinguished president. Derek Bok.

Editorial

The University and International Health Programs

by Dieter Koch-Weser, M.D., Associate Dean for International Programs

This issue of the Alumni Bulletin contains eight articles that indicate the strength and diversity of Harvard's involvement - both direct and, through its faculty and alumni, indirect - in international health activities. These articles deal variously with the responsibilities of biomedical scientists towards the third world, environmental and nutritional health problems of children in Colombia, the impact of visiting internists from the MGH on a department of medicine in Uganda, Harvard's support of a new medical school curriculum in Cameroun, medical education in Egypt, the role of the American University of Beirut, and the way in which health care is provided in Nepal. All these very excellent papers and the Harvard programs they describe are unrelated and are not the result of a programmatic effort by the Harvard Medical School, but of individual effort and ingenuity.

Actually, by design and not by neglect has the administration abstained from creating a separately controlled program of international activities. It was felt that a department or division of international programs would decrease rather than increase the desirable participation of all departments of the school in such an endeavor. With responsibility and control centralized in such a department, all others might lose interest.

As a matter of fact, one can argue that international medicine as a specialty has no more justification than Texas medicine or Brookline medicine. It simply indicates a place or setting where medicine is being practiced, be it primary care, preventive medicine or cardiology. In a rapidly shrinking world with increasing dependency of the many poor on the few rich, the many hungry on the few well-fed, and the many ill-cared for on the few medically well-cared-for, it becomes important that

knowledge and skills in all fields be shared with the less privileged in the US and abroad.

Minimal control and centralization, however, should not signify minimal coordination. With health defined by the World Health Organization as mental, physical, and social well-being, those who want to provide it must rely more and more not only on coordination of efforts, but on active cooperation of many professionals. Universities are particularly well suited for such a multidisciplinary approach. The interfaculty efforts of the Harvard Institute for International Development and of the Center for Educational Development in Health are applied in this direction.

Another reason universities should play a prominent role in health development as well as in other development programs is their ability and obligation to deny cooperation in activities and programs that, after careful study, are judged to be of little value. While national and international agencies for political reasons and profit-oriented organizations for financial reasons must find it difficult either to reject a program or to insist on fundamental changes in it, universities are — or at least should be — in a much better position to do so.

With their ability to search for, to interpret, and to understand cultural and social phenomena, universities should also be more able to adapt transferable knowledge and skills to the conditions of a different society. They should be capable of avoiding the belief that solutions proven to be of value to the US must also work elsewhere. Cooperation of anthropologists, sociologists, designers, engineers, economists, and health professionals in development programs is particularly valuable in light of the growing understanding that de-

velopment does not only mean economic development, but a general "improvement of the quality of life."

I have focused so far on the role of the university in programs designed to "give" - to assist in improvement of the health and living conditions of the less privileged in an international setting. One should not forget, however, that universities also "receive" a great deal from their international involvement. The value of exchanging personnel, methods, techniques, ideas, and knowledge with equally "advanced" countries has never been questioned. But it is not always recognized that working and observing in other countries under widely differing cultural, economic, political, and social patterns can also be a most valuable learning experience. The effectiveness of nonphysician health care providers in Nepal, the improved egalitarian distribution of health manpower in Cuba, the university-based planning activities in Colombia, the native healers in Malaysia are all phenomena of considerable relevance for our own health care system.

During the first half of 1973, I did a comparative study of the teaching of social medicine in twentyeight medical schools of Eastern Europe, Western Europe, and Great Britain. Interviews of students, faculty members, and administrators revealed that there was a greater acceptance of and priority given to this field in Eastern Europe and to an increasing degree also in Great Britain. This did not result from more or less marked academic and individual interest, but clearly from an overall emphasis on egalitarian social improvement and, therewith, a greater number of career opportunities in social medicine. These findings could be of

considerable value to American medical educators if they seriously accept the challenge to use health care and relevant training of health professionals for the purpose of improving the quality of life for all people — a challenge clearly presented to them by their students.

So on balance, our universities might gain more from international involvement than they give to it — particularly if they find ways to involve students in their programs. Some farsighted university administrations have already banned all projects that do not include student activities. Unfortunately, the funding of student participation has become increasingly difficult and there is always an excessive number of candidates for a diminishing number of opportunities.

Nevertheless, between thirty and fifty Harvard medical students work and study abroad each year under the auspices of the office of the associate dean for international programs. Most of these have been engaged in health care delivery programs in rural Guatemala and Colombia, in cooperation with the department of nutrition of the School of Public Health; and in Haiti and Brazil with the help of the department of tropical public health, as well as in Africa, Israel, Iran, Taiwan, Hong Kong and other countries. Undoubtedly, many more students arrange for working, learning and research experiences abroad, both in the developed and developing countries — with the assistance of individual faculty members and departments unknown to the Dean's office, or simply out of their own inventiveness and resourcefulness.

It is my feeling that even more opportunities could be created - well supervised and integrated into the student's overall program at Harvard — if faculty members and alumni, such as the authors in this issue, would try to involve students in their impressive international activities. In 1974, the office of the associate dean for international programs conducted a survey among more than 1,000 HMS faculty members. Only 283 returned the questionnaire (a not uncommon experience with this type of survey) and of these, 108 were actively involved in international activities at the time. Perhaps more importantly, 246 (about eighty percent)

expressed interest in either continuing or initiating this type of activity. Even accepting the probably faulty assumption that the non-respondents did not wish to participate, a figure of over 200 potential candidates would constitute a very significant pool for development programs in health care delivery, medical education, and other badly needed cooperative ventures throughout the world. Secondary involvement of medical students would certainly follow.

Another source of international contacts would be the many individuals from other countries who seek education and training at Harvard. During the academic year 1974-1975, 583 postgraduate trainees from 69 countries. not including short-term visitors, were enrolled in programs at the Harvard Medical School and its affiliated hospitals. In the same period, 86 foreign students from 39 countries took courses at the Harvard School of Public Health. These foreign physicians and scientists in most instances represent the best minds of their countries and, if given the opportunity, could contribute a wealth of intellectual and professional experience to our university life.

Too often, however, they spend their time here in rather narrowly defined activities, their contacts limited to the relatively small group of colleagues with whom they are working and studying. A broader exchange of ideas does not take place and the university misses out on a great opportunity to learn about and better understand the life of people outside the US. At the same time, these visiting professionals do not get the broad and multidisciplinary experiences they expected, and return to their homeland with increased knowledge and skill in only their specialized field. Many of them, as future leaders of their countries, as well as of their professions, could benefit from the expertise available here in political science, sociology, economics, philosophy, and so forth. A coordinated program for these hundreds of future decision-makers in the health field could broaden their range of activities into a true university education instead of narrow professional training. Harvard should not lose the chance to provide this large number of highly educated foreign nationals — almost as many as the medical students of our school with an intellectual experience.

Of course, not all universities in this country have or need have a significant and absorbing interest in international activities. But if such an involvement exists it should be taken seriously, beyond the fascinating trips to charming and exotic countries, the attendance at international gatherings, and the like. Harvard, due to its tradition and history of accomplishments in international endeavors, must follow this principle. The magnitude of the programs at Harvard indicates that our health professional schools are seriously committed in relation to both the activities of our faculty and students abroad, and the acceptance of foreign nationals here.

However, our efforts can be made more relevant and productive by taking the following steps:

- Without centrally administering the many international programs of the Medical School, efforts can be made to achieve greater coordination among them. In the above-mentioned faculty survey, more than sixty per cent of the respondents indicated that a more formal program in international activities should be developed and that the international activities of the individual faculty members and departments should be coordinated.
- Most international programs, and particularly those aimed at better health care, should be planned, implemented, and evaluated on a university-wide basis. In the same faculty survey, seventy percent stated that "the medical school and dental school should participate in the university-wide interdisciplinary effort of the 'Harvard Institute for International Development.'"
- In recognition of their educational importance, international activities should be taken as a serious commitment, and academic prestige and continuity provided.
- Efforts should be made to provide a more comprehensive and multidisciplinary experience for the many foreign postgraduate students.
- To accomplish all this, funding for these activities, particularly for student involvement, must be sought on a reasonable priority basis.

Some might question whether an international program is worthwhile at all. We feel that it is. Therefore, it should be conducted to provide the greatest possible benefits to our foreign partners and to ourselves.

Biomedical Science and the Third World

by Thomas H. Weller '40

Biomedical scientists are a privileged group. We derive from a stratum of society that provides the satisfaction of devoting our professional lives to the pursuit of new knowledge. We are a favored few - but pitifully few, if we recognize our responsibility for the biomedical welfare of a rapidly increasing human population. In the developing areas of the world, the synergistic effects of infectious diseases and malnutrition are the primary causes of mass misery and of an abbreviated life expectancy. Yet attempts to control infectious diseases, if achieved in isolation without concurrent economic and social development, while morally desirable over the short term, are immoral when viewed from a more distant perspective. The long term consequence of disease control without concurrent population control is an augmentation of the numbers of impoverished people and a reduced per capita annual income. Pandemic disease and mass starvation will predictably follow. Thus, improvements in health must be paralleled by economic development, and by improved opportunities for education.

We solve complicated problems in the laboratory with great sophistication. The variables in our experiments are finite and controllable. The genetic constitution of our experimental mouse or cell is defined, its nutrients and environment are controlled, and the cage or culture tube is standardized. Relatively

This is taken from a speech presented by Thomas H. Weller '40 at the "25 Jahre Tagungen der Nobelpreistrager in Lindau," Bodensee, Germany, June 23, 1975. Dr. Weller, who won the Nobel Prize in 1954 in physiology and medicine, is the Richard Pearson Strong Professor of Tropical Public Health and chairman of that department at the School of Public Health. few financial and political constraints influence our experimental design. We derive satisfaction from the intellectual challenge of a problem on the forefront of advancing knowledge.

Let us contrast the relative simplicity of these experimental protocols with the incredibly complex experiment of nature in which the subjects are heterogeneous, are enfeebled to a varying degree by disease and malnutrition, are inadequately housed, and are exposed daily to environmental influences beyond control. Further, they are subjected to varying behavioral influences and may be ravaged by the vicissitudes of violent political change. Controlled experiments in the strict sense are unethical, for we cannot withhold benefits from a portion of the experimental population. The experiment of nature is one in which we are all participants and have a special responsibility. Our goal is the elucidation and application of biomedical knowledge to close the now widening health gap between the developing and the developed areas of the world.

This year the increment of births over deaths will add some eighty million individuals to the human race. The current global rate of population increase is slightly in excess of two per cent that is, the population will double in thirty-five years; and the most explosive increase is occurring in the underdeveloped regions. 1,2 In terms of age distribution the global population is growing younger; a recent UNICEF bulletin emphasizes that by 1980, there will be over two billion people under the age of eighteen years, and of these threequarters will live in the developing nations. While the need for pediatricians is decreasing in the developed areas of the world, elsewhere pediatrics is the specialty of the present and future.

Figures on the rate of increase of selected populations fail to document the worldwide urban reaggregation of peoples. For example, the population of Mexico City grew from three million to over seven million between 1950 and 1970. While the total population in an underdeveloped country may double in twenty to thirty years, the doubling time of urban centers is ten to twenty years. In many instances, hygienic conditions in city slums, an ecological human habitat aptly referred to by Fendall as the "septic fringe." are much worse



than those of the rural regions from which the inhabitants originally came. Incredible population densities occur: in one epidemiological study of a cholera outbreak in Hong Kong, the population density was 3,000 per acre — the equivalent of about one and a half square meters per person.³

What are some of the constraints that contribute to prevalent ill-health in the lesser developed countries? Why do infections and parasitic diseases account for approximately half of all deaths in

the Third World as contrasted to the five to ten per cent of deaths in the developed areas? First, the human host is often malnourished and is predisposed to fatal consequences of infectious diseases that otherwise are relatively benign. In one study in a tropical country mortality due to measles was 274 times that in the United States. At the World Food Conference in Rome in November 1974 it was estimated that almost twenty-five per cent of the population of the Third World — over 400 million people — have an insufficient protein-energy food supply.

Second, financial resources are grossly inadequate. A current World Bank Report indicates that of sixty-five developing countries, fifty-eight have less than ten dollars per capita per year available for all health expenditures, and in seventeen countries less than one dollar per capita is allocated for preventive and curative medical services.4 Limited financial resources curtail the provision of potable water supplies and of adequate sewage disposal facilities that would greatly decrease morbidity and mortality associated with infections and parasitic diseases. Less than half of the world's population now enjoys the safety and convenience of an accessible potable water supply.

A third area of constraint is limitations of medical manpower and of associated health personnel. In many of the lesser developed countries there may be only one physician per 20,000 population, and the ratio may fall as low as one doctor per 90,000 people. Characteristically, physicians concentrate in urban areas, and large rural populations may have little or no access to medical care.

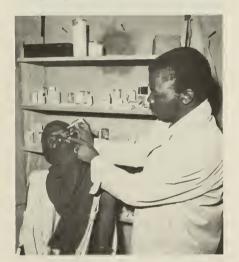
Another constraint is the inadequate state of biomedical knowledge. Research is sorely needed to develop better methods of prevention and treatment of many infectious and parasitic diseases.

In light of these constraints, what are the responsibilities of the biomedical scientist?

The control of human reproduction is a matter of personal decision and motivation. The development of improved and simplified methods of contraception — while a desirable goal — will not in isolation have a significant impact. Prere-

guisites for accepting control of personal fertility - ill-defined and varying from culture to culture — require an improving standard of living, of education. and concomitant economic and social incentives. Most important is the control of premature death. In many societies, children are the equivalent of social security: the elderly are supported by their offspring. A couple will not limit the number of offspring if they can anticipate that three of five children born will die before reaching age six. Nor will reduction of numbers of children immediately parallel falling mortality rates; a lag of one to three decades must be expected. A transient increase in growth rates must be accepted before the rate begins to fall.

Every effort should be made to combat the synergistic effects of malnutrition



and infectious agents, which are the major cause of premature death all over the globe. The responsibility for research leading to an improved technology must be assumed by biomedical scientists in the developed regions. Recently, two colleagues with long experience in countries as disparate as Indonesia and Colombia independently deplored the lack of interest and support in the United States and Europe for research on tropical diseases. They pointed out that occupied as they were with full-time efforts to minimize urgent health problems, no resources could be devoted to research.

While new knowledge is urgently needed, a dramatic and almost immediate impact on premature death could be achieved by an improved system for the provision of health services, based on the use of nationwide cadres of medical auxiliaries who are drawn from the ever increasing numbers of high school graduates and given specialized training of one to two years duration.5.6 Although relatively few developing countries have initiated systems of medical care based on use of medical auxiliaries, properly supervised health assistants — when supported by a pyramidal upward chain of referral facilities — offer a sophisticated and effective level of preventive and curative medicine. As the dispute between the proponents of specialized medicine and those who desire to build from the village level up continues, the fate of millions of people is in the balance.



Biomedical science also needs to maintain the capacity to anticipate and to deal with the ever changing pattern of infectious disease. It is erroneous to assume that infectious disease can be permanently conquered. With respect to infection Theobald Smith wrote, "Nature abhors a crowd" - and certainly the human race can now be so termed. Infectious disease can be expected to appear in new manifestations and to threaten our effort to contain premature mortality. In 1968 and 1969, for the first time in fifty years, a particularly virulent type of bacillary dysentery — due to the Shiga bacillus — appeared in Central America: during the first ten months of 1969 in Guatemala alone there were 112,000 cases of dysentery with 8,300 deaths.7 In 1971, cholera appeared in epidemic form in sub-Sahara Africa for the first time in recorded history; more than 4,700 cases were treated in just the Ibadan area of Nigeria.8

Some tropical diseases are increasing as a consequence of environmental modification associated with urbanization or rural development. One type of filariasis, transmitted by the common pest mosquito that breeds in polluted drainage ditches, is becoming a major problem in urban slums in the tropics. Similarly, the area where schistosomiasis is endemic is increasing. The pressures for more food production and hydroelectric power in the tropics, with the resultant construction of massive man-made lakes and irrigation systems, have greatly expanded the habitat of snails that are the intermediate hosts of schistosomes and have enhanced opportunities for human contact with infected water. Examples are the High Dam in upper Egypt which has produced Lake Nasser and will permit irrigation of two million acres, the Akosambo Dam on the River Volta in Ghana, which has created 3,500 miles of new shore line, and the Kainji Kale Dam in Nigeria that involved the resettlement of 50,000 people. It is common knowledge that surveys by international agencies, including the World Health Organization, have often shown an explosive increase in the incidence and intensity of schistosomiasis around man-made lakes. However, few such surveys have been published; national governments are reluctant to release statistics reflecting adversely on developmental projects that are symbols of national pride.



In general, biomedical science has not participated actively in the formulation of policy and plans for development in the Third World. During the 1960s, the huge developmental assistance funds — averaging six billion dollars a year — that flowed from the developed areas of the world were allocated by economists and political scientists without consideration of the health component. There are several reasons for this.

First, the beneficial impact of agricultural or industrial development can be quantitated from the economic standpoint. No comparable data are available to assess the economic impact of good or ill-health. We do not have economic data to support our belief that a complex causal relationship exists between the state of poverty, or lagging social development, and the coexistence of debilitating disease.

Second, the view that expenditures on health will abet the population explosion has sometimes channeled resources away from the health field. Morally unjustifiable, such a policy does not consider that funds expended for education systems are wasted when prevalent morbidity causes intermittent attendance at school of pupil and teacher alike; that accepting control of reproduction by a society awaits lowering of excessive infant and child mortality rates; and that there is accruing evidence that the mental development of

the infant suffering from the synergistic impact of infection and malnutrition may be permanently impaired.

The World Bank has recently catalyzed the needed interaction between developmental economists and scientists in the health field. A Health Sector Policy Paper published in March 1975 states that the Bank has decided to "strengthen its awareness of the health consequences of the projects it supports, and of opportunities for improving health that are available under present patterns of lending." This policy is certain to have ever widening beneficial implications.

We face decisions as to the nature of our individual efforts in research. What new knowledge is needed? What effort should be given to devising new technologies? A recent WHO analysis of potable water supplies in sub-Sahara Africa is illustrative of the problem.9 In 1970, in this region, only twenty-one per cent of 182 million people had access to potable water. Member governments indicated plans to provide an additional sixty-three million people with potable water by 1980 at an estimated cost of over two billion dollars. However, in the same ten year period, the population will have increased by some fifty-nine million individuals. Thus, in spite of the proposed huge capital investment over the next decade in Africa, the number of people without water service will not change significantly. New technologies, simple in nature, must be developed to solve the problem of supplying water for domestic use.

Chagas' disease, a protozoan infection transmitted by a blood-sucking bug, could be eliminated if housing in rural Latin America could be improved — an exceedingly difficult objective in view of economic constraints and a rapidly increasing population. There is no proven specific chemotherapeutic agent for Chagas' disease, the leading cause in endemic areas of sudden death in the productive period of adult life. The development of appropriate drugs and of effective and economical means to bug-proof primitive housing are challenging areas for investigation.

The expanding threat of schistosomiasis could be minimized if biomedical scientists were involved in

the collaborative planning of dams and irrigation projects. Habitats for vector snails could thereby be "engineered out." Yet knowledge of the biology and control of vector snails is in its infancy, and the global component of medical malacologists — i.e., snail experts — is meager. Further, our knowledge of the natural history of schistosomiasis in humans is incomplete. Nor do we have completely safe schistosomacidal drugs that can be applied population-wide. The subject of schistosomiasis requires intensive research.

Biomedical science can be proud of what has been accomplished in the past three decades. In the most impoverished areas — at home and abroad — increases in life expectancy of ten to twenty years have been achieved. For the first time, global campaigns for the control or eradication of disease have been undertaken. Three such campaigns deserve brief comment. Yaws is a non-venereal spirochetal disease, confined to the humid tropics, and most often acquired by direct contact. Penicillin, for yaws as for syphilis, is the magic bullet. A single injection will provide a cure. Under the combined sponsorship of UNICEF and WHO, millions of injections of penicillin were given in rural tropical regions during the 1950s. Coverage was not complete and yaws was not eradicated, but the consequences of a tropical pandemic were minimized.

A second noble crusade was the WHO-sponsored program for the eradication of malaria, initiated on a global basis in 1955. Using DDT as a residual insecticide, tremendous progress was achieved; by 1971, malaria had been eradicated from thirty-seven countries, and 728 million people were freed from the curse of this disease. To this campaign, in the decade ending in 1967. the US taxpayer contributed some 275 million dollars. That the goal of global malaria eradication was not achieved was due to many factors, among which were the unwarranted reliance on the single technique of application of residual insecticides, and the failure to continue research on malaria in anticipation of a continuum of new problems. Currently, there is slow progress in some areas while in other regions malaria is resurgent. In sub-Sahara Africa malaria persists in an unaltered hyperendemic state.

A third global campaign, the eradication of smallpox, is in progress. It is sponsored by WHO, with strong support from our Center for Disease Control in the United States, and the Swedish government. In 1945, smallpox occurred regularly or sporadically throughout the world. By 1967, the disease had been eradicated in the Americas. Australia, Europe, and in Indonesia, Since 1967 the disease has been eradicated from Africa except for a small area in Ethiopia. Elsewhere, only in Bangladesh are cases still to be found. No case has been identified in Pakistan since October 1974. In the Indian subcontinent a prize of fifty rupees is being given for recognition of a case. Helicopter-based teams are working the outregions of Ethiopia. Some knowledgeable workers now predict that the year 1975 will be recorded as the year smallpox disappeared from the earth the first time a disease has been globally eradicated.

The involvement of biomedical science in global health problems is essential. Progress to date has resulted in an imbalance between births and deaths. which is to be expected. The extent of the imbalance, and therefore the ultimate size of the human population, will be influenced by the rapidity with which the health gap between the developed and the developing regions of the world is narrowed. Pandemic disease in new forms, and a continuum of new problems in the infectious disease field must be anticipated. An informed biomedical scientific community has a grave responsibility — to narrow the gap and to be prepared to meet new problems. Our response will determine the nature of the world inhabited by our grandchildren.



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Caring for Mother and Child in Cameroun I. Setting Up a Program

by Charles A. Janeway, M.D.

In 1963, the government of newly independent Cameroun requested WHO to study the feasibility of establishing a medical school there.* This led to rather unique plans for a Centre Universitaire des Sciences de la Santé (CUSS) which was to be a "regional institution for training physicians and other health workers in a fashion relevant to the African setting, with emphasis upon integration of public health, preventive medicine, and clinical medicine and implications for extending to all the population low cost methods of health protection and improvement." The development of CUSS was supported through a multilateral arrangement. with funds for buildings and equipment as well as for technical assistance personnel, from WHO, Canada, France, and the United States. The goal of the school was to be the team training of health personnel — doctors and technicians since nursing schools were already in existence - for service in the rural areas of the country, with a heavy emphasis upon public health.

It was these two challenging features of CUSS — an educational plan designed to prepare personnel to meet the region's most pressing health needs rather than to copy the medical schools of an industrialized nation, and the multinational sources of its financial and technical support — which sparked interest at Harvard. In the summer of 1973, we applied to the US Agency for International Development (AID) for a

Dr. Charles A. Janeway is professor of pediatrics at Children's Hospital Medical Center and the campus coordinator for the Harvard-CUSS project. For a more detailed account of the history, goals, and program of CUSS, see: Guillozet, N. Cameroon Provides Relevant Training. International Comments, JAMA 232, No. 4, 409-410, April 28, 1975.

four year contract to enable Harvard to strengthen teaching in maternal and child health at CUSS. We were also pleased because several of the CUSS participants previously had been connected with Harvard. The first USAID project manager at CUSS, Dr. Stephen Joseph - now in charge of international health at Harvard School of Public Health — had been a former resident and teaching fellow in pediatrics at Harvard. Dr. Victor Ngu, professor of surgery at CUSS and a recipient of the Lasker Award for his work on Burkitt's Lymphoma, had been a visiting investigator at the Children's Cancer Research Foundation during the summer of 1972. Also, the able director of CUSS, Dr. G.L. Monekosso, was well known to a number of Harvard faculty.

By the time the contract was signed in late November 1973, Dr. Noel Guillozet, selected as pediatrician and chief of the party, had already reached Yaounde. After most of a year spent recruiting the rest of the team, getting housing for them, purchasing and installing equipment, and working out a plan for the project, the full team of four was assembled in Yaounde by the start of the academic year 1974-1975.

Dr. Guillozet, a Hahnemann graduate of 1964, trained in pediatrics at the Cleveland Clinic, is fluent in French (an essential element), and had experience including a medical student fellowship in Latin America, two years as physician to the Peace Corps in India, and four years, two of them as director, in a pioneering community health center and medical care program in rural California. Ms. Nancy Garrett is a very able Canadian nurse with a B.Sc. in nursing education from Teachers College, Columbia University, and an M.P.H. from Michigan. She had pediatric and public health nursing, teaching and research experience in the US,

Canada, France, Australia, and India. Dr. Pierre Drouin, a graduate of the University of Sherbrooke with training in surgery at the Montreal General Hospital and in gynecology and obstetrics at the University of Ottawa, has done a splendid job in maternal health, obstetrics and gynecology in Yaounde, with his Camerounian chief, Dr. B. Nasah. Ms. Lise Cousineau, trained in nursing and in midwifery, had extensive service overseas in Algeria and Tunisia and as a consultant in Senegal, Ecuador, Colombia, and Zaire. She came to our project after three years as assistant professor at Downstate Medical Center of the State University of New York in a program that trained midwives from developing countries in family planning.

The core of the Harvard-CUSS project is teaching basic maternal and child health to CUSS medical and nursing



students, with emphasis on these essential points: the greater efficacy and lower cost of prevention as opposed to the treatment of desperately sick and often medically neglected children; the importance of organizing a team — nurse, midwife, technicians, and locally trained aides — to assume much of the burden of preventive and curative services; and the necessity for organizing basic maintenance and supply systems if drugs, parenteral fluids, vaccines, and essential equipment are to be available when needed.

During the second and third years of their six year program, the students work in a model maternal and child health clinic, and provide ongoing preventive services — health promotion. nutrition, immunization, family planning, and health education — in a building adjacent to the pediatric section of the Central Hospital. This hospital is where students get much of their clinical experience in the last three and a half vears of their program. In the Harvard-CUSS clinic, the practice of preventive medicine, including prenatal care and family planning advice for mothers on an ambulatory basis, goes on close to the maternity service and right beside the wards for sick children. The pediatric staff headed by Professor Nkoulu has greatly improved the care of the latter by using the same

facilities for follow-up of all children discharged from the hospital — attempting to assure adequate nutrition, completion of all immunizations, and prevention of repeated hospital admissions.

All students are paid by the government during the six years of their education. and are bonded for ten years of government service after its completion. They will be sent to staff district hospitals and rural health centers, which should not be unfamiliar, as service in such community health facilities occupies from one-fifth to one-third of their educational time during the fourth, fifth, and sixth years. The first class of medical students entered CUSS in 1969 and have just graduated in September 1975; they are now in the field starting their government service. Plans have been made for "recycling" health personnel both in the field and in Yaounde to provide continuing education and keep health practices up to date.

Harvard's project which is actively seeking personnel to replace the current team in the summer of 1976 is slated to continue until the autumn of 1978, but meanwhile our hope is to create links between the faculties of Harvard and CUSS, so that mutually beneficial collaboration in research and teaching will continue. We believe that this new school for health personnel,

created specifically to meet the basic health manpower needs of a developing country with very limited financial resources, will have much to teach us about choosing priorities and utilizing manpower and resources more efficiently and economically ourselves.

One example of such collaboration is the case of Dr. Boniface Nasah, chief of the obstetrics and gynecology service. who spent three months at Harvard during the summer of 1975 supported by counterpart training funds of the Harvard-CUSS Project. As visiting lecturer in obstetrics and gynecology, he attended conferences and teaching sessions at the Boston Hospital for Women and Beth Israel Hospital, and gained practical experience in laparoscopy in the department. He spent the major share of his time in the immunology laboratories at the Robert Breck Brigham Hospital, with Drs. John David, Peter Schur, and Ross Rocklin, pursuing his research on the immunological aspects of male infertility. He also worked closely with Dr. Chester Alper of the department of pediatrics and the Center for Blood Research at Children's Hospital Medical Center. His paper which follows, based on a lecture given at HMS in July 1975, describes the problems of maternal and perinatal health faced by his extremely busy service at Central Hospital, Yaounde.

The clinic for mother and child being run for demonstration, teaching, and research in the CUSS pavilion at Central Hospital. Note the explanations in French and native language for breast feeding and immunizations.



Caring for Mother and Child in Cameroun

II. Running the Maternity Service

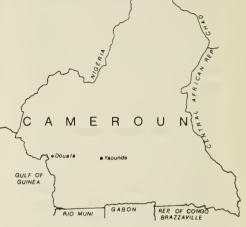
by Boniface Nasah, M.D.

Cameroun is a triangular shaped country with a western coastline on the Gulf of Guinea. To the north and northwest it borders Nigeria, with Chad to the northeast and the Central African Republic to the east. To the southeast is the Republic of Congo Brazzaville, with Gabon and the Spanish coast colony of Rio Muni on the south. The population of Cameroun exceeds six million according to the highly questionable data available. The total area is approximately 465,000 square kilometers with a population density of about 13/square kilometer. The national crude birth rate is estimated to be 42/1000 and the national crude death rate is approximately 23/1000. About fifty-two per cent of the population is female. The structure of the population exhibits the usual broad based pyramid typical of youthful populations, with over forty-five per cent falling below fifteen years. Very nearly a quarter of the population lives in urban areas, this being concentrated mainly in Douala (309,540) and Yaounde (about 200,000).

The Central Hospital of Yaounde served as the specialist hospital for the capital of the country until September 1972, when it began to provide clinical facilities for medical student clerkships. The maternity services of the hospital (total bed capacity 400), are housed in an old colonial style building with ninety beds, which deal with an estimated 14,000 admissions annually, 10,000 of which are maternity cases. Four thousand are gynecological cases of varying categories, but are predominantly acute emergencies. The functions of the department of obstetrics and gynecology include care of patients on the maternity service, teaching of medical and paramedical students, and clinical research.

For over forty years, two separate maternity services had been run by two separate individuals, one providing services for the poor, the other for the rich, including civil servants. This resulted in two different standards of care with apparent neglect of the poorer class. and concomitant increase in mortality and morbidity. In July 1973, as a result of a presentation to appropriate authorities, these two services were united under one chief of service. That fall, the obstetrics/gynecology staff was increased to three Camerounian specialists. In October 1974, an additional specialist, Harvard-sponsored, joined the staff. Shortly thereafter, an outpatient wing was added, including a laboratory that is still inadequately equipped. Efforts for the construction of an intensive care unit for mother and child are still being pursued.

Vital statistics, at least of a simple even "symptomatic" sort showing illness rates in mothers and children, are required to guide the physician's efforts. Realizing this, we made it one of our priorities in September 1972 to initiate some form of record keeping, since there was no effective record department in the traditional sense in the entire hospital. Such data available from the biased, but still useful, statistics of a hospital may give valuable indications of the main disease problems of the area it serves - although such common factors as bed capacity, difficulties with multiple diagnoses, local communications, and the degree of rapport with the people in the area and with their ideas about the treatability of diseases, all have to be taken into account. Only after that was initiated were we able to attempt a critical evaluation of the program at the end of two years. Some of the results follow.



Maternal mortality

1973: 10.22/10,000, 8 maternal deaths in 7,724 deliveries 1974: 13.64/10,000, 13 maternal deaths in 9.526 deliveries

Compared to data from other African countries, this may not be alarming, but it is unacceptable, particularly because ninety per cent of these deaths are preventable. Admittedly, some of those women who come to our health facilities may be in the late stages of obstetrical catastrophe, with obstructed labor, ruptured uterus, postpartum hemorrhage, or severe perineal laceration. These complications are triggered by various circumstances such as bad road conditions or bad modes of transportation, and contributed to, also, by the often questionable competence of the attending paramedical staff. Thus, there is a one per cent chance of death in a reproductive career of eight children. The common causes are puerperal sepsis following surgical deliveries, postpartum hemorrhage and ruptured uterus, anemia, medical complications, and thromboembolism. The rate of Caesarean section is one and a half to two per cent.

Birth weight

• Babies with birth weight of over 2,500 grams.

1973: 6,820 or 85.3% of all deliveries

1974: 8,806 or 91% of all deliveries

Mean birthweight by sex was computed in a randomized fashion from 500 males and 500 females, including newborns of 500 grams. The prematurity rate is about one per cent. Preeclampsia and eclampsia are not a major problem.

 Mean birth weights. These birth weights do not seem to reflect a major nutritional problem in our pregnant women, and compare favorably with figures from other parts of Africa as shown in the table below:

Research areas

- Anemia in pregnancy. This is the commonest complication of pregnancy, with an incidence varying from twenty-five to fifty per cent, the important indicator being the socio-economic status of the patient. Preliminary results of a clinico-pathological study now underway incriminate iron deficiency in the majority of cases, followed by a smaller group with megaloblastic picture; a combination of both deficiencies forms the third group. More in depth studies to provide information on the nutritional values of local foods (preand post-cooked), the blood value differential of folate, vitamin B-12, serum protein, in anemic and non-anemic patients, the role of parasitic infections, etc., will be the only logical approach to appropriate preventive measures.
- Teenage pregnancy. A fact not mentioned in the statistics shows that our patients attain grand multiparity (five living children) at the average age of twenty-seven and a half. Accordingly we have initiated, with student participation, a longitudinal study on the occurrence and effects of pregnancy in the teenage socio-economic group.
- Postpartum amenorrhea. Also being studied are the clinical and socioeconomic factors affecting postpartum amenorrhea, and its relevance to child spacing.
- Mortality. An etiological study is being conducted on the epidemiology of perinatal and maternal mortality.
- Placental and fetal birth weight. The relationship between placenta and fetal birth weight is also being studied.



Country	Population Studied	Mean Birth Weight in Grams	Source and Type of Sample
Cameroun	Low socio-economic	Male 3.167 grams Female 3.061	Hospital, random
Accra	(a) General pop. (917)	2.879	Hospital, excluding twins
	(b) Prosperous (201)	3.188	
Senegal	Prosperous	2.007	Hospital, excluding twins
Kenya	(a) Prosperous (750) (b) General (267)	3.153 2.830	Hospital deliveries, excluding twins and infants born prematurely (with the exception of children born following induction of labor in later weeks of pregnancy for minor degrees of disproportion)
Guinea	Sample not stated (331)	3.486	Born in hospital
Tanzania	Peasant farmers (2007)	2.900	



Camerounian medical student examines a child with severe kwashiorkor (malnutrition).

Family planning

The official policy of the government of the United Republic of Cameroun is pro family planning and also pro natalist. In other words, it views the necessity for investigation of the infertility of a couple as just as relevant to the improvement of the "quality of life" as the offering of tubal ligation to a couple who has achieved their desired family size. A study initiated by the CUSS/Harvard Team seeks to determine the sociocultural clinical and pathological profile of patients who seek family planning advice. However, such a study would be more meaningful if local Camerounian sociologists were able to participate on a consultative basis. There is also need for supportive non-technical staff.

Infertility

Involuntary infertility affects the welfare of society because reproduction is an essential part of marriage, an institution that is an integral part of our culture and civilization. Such infertility ranks high among the causes of deep unhappiness and even divorce because a childless union, irrespective of the culture in which it occurs, lacks the strong cementing force that leads parents to subordinate all selfish desires for the common good of the family.

Three main groups of patients with this problem have been categorized, those with secondary infertility forming about fifty to sixty per cent of all cases. Plans

for establishing the role of sterilizing diseases like gonorrhea and puerperal sepsis are underway. However, histological and bacteriological studies of 110 endometrial biopsies vielded a two per cent pick-up rate for pelvic tuberculosis. The male factor is responsible for about twenty-five to thirty per cent of sterile unions. The findings in this group, in which I am particularly interested, will form the subject of a more detailed report. I am currently studying immunological methods that will be applicable to a fuller investigation of these patients and some immunological factors that may be responsible for habitual abortions. The third and smallest group comprises patients with endocrine problems, such as polycystic ovary syndrome.

An etiological study on abortions, both spontaneous and induced, is also underway. The preliminary data, showing that five to ten per cent of abortions are induced, may have some relevance to the high incidence of secondary infertility.

Our young graduates will have to face monumental problems, often alone. For this reason our training program differs from the usual medical educational programs that leave to chance or actually interfere with development of the self-reliance they will need in that setting. In the matter of clinical training, we are trying to match what the students must do with the training they need to do it. Hence our fifth year students undertake minor emergency surgical procedures, and in the sixth year are helped to acquire skills in the major interventions like Caesarean sections or abdominal surgery on acute gynecological emergencies. Our main concern is to adapt scientific principles to our relevant ecology, without necessarily lowering academic standards.

There is a need for emphasis on a single standard of high quality maternity care, including nutrition, for all pregnant women. To this end, a modification of the Friedman curve of labor has been adopted for the teaching of medical and paramedical students in the active management of labor with emphasis on early anticipation and detection and prompt treatment of abnormalities.*

The simplicity of this curve of labor will lend itself to use by midwives in rural areas. This should enable them to de-

tect problems early in labor for referral to the hospital. Even more important as a preventive measure is the emphasis that will be placed on the detection of high risk cases early in pregnancy. Appropriate guidelines, again particularly for midwives in the rural areas, will be established.

Emphasis will have to be extended to the institution of immediate neonatal and postnatal follow-up services to ensure survival of the nearly ninety-one per cent of babies born alive. Diagnosis of hereditary diseases, at birth, like sickle cell disease, should contribute to a more comprehensive child health program.

The vulnerability of the mother and child is an established fact in most growing populations. This calls for close collaboration and functional integration of the disciplines of obstetrics. gynecology, pediatrics, and preventive medicine, each operating within the limitations of its professional competence. While the major and long term objective will be prevention and health education, the provision of curative services cannot be minimized, at least for a time, in an environment characterized by acute medical conditions. Neither prevention nor cure is worthwhile unless there are also good diagnoses, effective treatment, and follow-up. It is only at individual levels that services can identify cases of high risk, and the multifarious nature of those risks.

To achieve this, we need (and governmental efforts are underway to provide): improved facilities for accurate diagnoses; intensive care management for mother and child; facilities for graduate training located in relevant geographic areas; and an efficient record system.

^{*} Developed by Dr. Emmanuel Friedman, professor of obstetrics and gynecology, Harvard Medical School and chief of service at Beth Israel Hospital.

MGH Expatriates in Uganda

by Gerald S. Foster '51

"The Kingdom of Uganda is a fairy tale. You climb up a railway instead of a beanstalk, and at the end there is a wonderful new world. The scenery is different, the vegetation is different, the climate is different, and, most of all, the people are different from anything elsewhere to be seen in the whole range of Africa." So wrote Sir Winston Churchill in 1908. Despite social, political and economic changes, his Uganda still exists. A major attraction to those who choose to live and work in East Africa is the juxtaposition of the old and the new and the challenges this provides.

Uganda is a little smaller than the state of Oregon, has a population of about ten million, and straddles Lake Victoria on the equator. Its climate is tempered by the relatively high altitude of most of the country. It contains the source of the Nile, the snowcapped Ruwenzori Mountain Range (the legendary Mountains of the Moon), and some of the best game parks in East Africa. At spectacular Murchison's Falls, the Nile explodes through a twenty foot channel and thunders down a 140 foot drop before settling down for its 3,500 mile journey northward to the Mediterranean.

The people

The people of Uganda are divided into several tribal groups with different languages, different traditional social structures, and often different cultures as disparate as the Swedes from the Italians. The largest and generally best educated are the Bantu Baganda — and within their territory is the capital city of Kampala. The most primitive tribe is the largely unclothed Karamajong, whose diet consists of cow's milk

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and blood and who honor their cattle above all else. Like their cousins, the Masai, they continue to resist the inroads of the twentieth century. The first president of Uganda (until his violent expulsion in 1966) was Sir Edward Mutesa II, Kabaka (king) of the Baganda when the country gained independence from the British in 1962. Milton Obote, the first prime minister and subsequent president of Uganda until his overthrow in 1971, is from the Nilotic Lango tribe. General Idi Amin. the current president, is from the Nilo Hamitic Kakwa tribe, which is near the Sudanese border and has a warrior tradition. Tribalism is still very much a reality and a sense of nationhood does not come easily in these circumstances. At home most Ugandans speak their own tribal language and communication with members of other tribes is still a problem. To some extent, Swahili has become a lingua franca. and English has been retained as the official language of the schools and the government.

In addition to the Africans, there were, until recently, eighty thousand Asians whose parents and grandparents immigrated from India. Skilled tradesmen, they developed — and controlled — much of the commerce of Uganda and were well represented in educational and medical fields.

Medical facilities

Uganda shares one thing above all else with other developing countries — poverty. There are shortages of medical personnel, drugs, equipment, and facilities. Nevertheless, there is a network of aid posts and dispensaries (largely staffed by medical assistants, midwives, and nurses) along with district hospitals and regional hospitals, which provide a variety of curative, public health, and educational programs. At the top are Makerere University and the Mulago Hospital.





A Baganda woman

Enter the MGH

In 1966 Dr. William Parson, professor and chairman of the department of medicine at the University of Virginia, succumbed to the lure of Africa and accepted a six year appointment as professor and head of the deprtment of medicine at Makerere University and the Mulago Hospital. In a sense this was the beginning of the MGH involvement, for Dr. Parson had been a medical resident there from 1939 until 1942. In 1969 Dr. Edwin P. Maynard, with the support of the Milbank Foundation, was the first of four present members of the MGH department of medicine to accept a one year appointment to the faculty at Makerere. I followed in 1970, Dr. Robert Schapiro in 1971, and Guillermo Sanchez '49 in 1972. We took part in all patient care and teaching activities of the department of medicine. For all of us and our families this was a rewarding experience, a stimulating challenge, and an opportunity to make a unique contribution, which helped to form a balanced view of the world we live in.

Makerere University

In 1970 sixty students from Uganda, Kenya and Tanzania received the M.B.. Ch.B. degree (bachelor of medicine and surgery). Makerere University, the first founded in East Africa, is the alma mater of many of its intellectual and political leaders. Degrees in disciplines as varied as medicine, law, philosophy and agriculture are offered. Picture a young man trying to study algebra in the corner of a dark and crowded mud hut surrounded by miles of bush, on a diet of a single daily meal of corn meal and sweet potatoes, while his brother shivers with malaria. The path to a higher education for most Africans is not easy. English is a second language. Family responsibilities and, at times, resistance (especially for girls) are often deterrents. School fees have to be paid even when money for corn meal and sugar, let alone milk or meat, is in short supply. A small percentage of those who start school do survive the pyramiding British oriented education system and qualify for medical school. The quality of preparation and performance of the medical students varies greatly, yet many are the equal of our own HMS students. There is a tendency to regard professors with awe and reverence and to accept their words as gospel. It was a challenge to try to instill a spirit of independent thinking and questioning. The Socratic method of teaching is not always a comfortable experience for the African student.

The Mulago Hospital

The 900 bed Mulago Hospital is the teaching hospital for the Makerere University Medical School, a national referral center for other hospitals in the country, and also serves as a district hospital for a large area of south central Uganda. The medical service has approximately 125 beds — although there are frequently more patients than beds with many on mats on the floor. One has to become skilled at performing physical examinations on one's knees.

Patients ten years or older are admitted to the medical service. Only ten per cent of the admissions are over the age of fifty with the largest group in the twenty to thirty year old range. It was rather disconcerting on rounds to have a patient presented as an "elderly forty-six year old cultivator."

Family ties are strong and the African tradition of the extended family is very much in evidence when illness strikes. Attentive family members are frequently present providing care and comfort and often sleep on the floors of the corridors at night. The extended family generally takes care of the need for social service departments and nursing homes. Sadly, this is breaking down in the cities to some extent.

Disease patterns

We had to get used to a whole new spectrum of diseases. Poverty, climate, geography, and the different tribal cultures are all important determinants of the diseases seen.

Malaria is endemic everywhere except in the mountains and enters into the differential diagnosis of almost any febrile illness. In addition malaria is causally related to the development of tropical splenomegaly, probably plays a role in the epidemiology of Burkitt's lymphoma, and is a common cause of the nephrotic syndrome.

The banana growing tribes have the highest incidence of kwashiorkor due to the staple diet's lack of protein and to early weaning. Shade from the banana leaves, adequate rainfall, fecal contaminated soil, and a barefoot population are also the ingredients leading to widespread hookworm disease. It is not uncommon to have a patient walk into the hospital with a hemoglobin of three grams from hookworm.

The cattle raising tribes of the arid regions are subject to brucellosis. Kala azar is also seen in this setting. The sand fly breeds in the shafts of termite nests and bites the men who herd cattle or sit around for hours having discussions under sacred trees. In times of drought, cattle die and people starve.

The fishing tribes along the Nile are not so much at risk from the crocodile or the hippopotamus as they are from the fresh water snail and schistosomiasis. Trypanosomiasis (sleeping sickness) is another disease that has periodically taken its toll over the years, leaving certain areas of the country habitable only by wild game. Some of the game parks owe their existence to this phenomenon, and an occasional case is still seen.



Tetanus, typhoid fever, tuberculosis, amebiasis, endomyocardial fibrosis, sickle cell anemia, and syphilitic heart disease are commonly seen on the medical wards. There are many "old friends" as well, including hypertension, pneumonia, peptic ulcer, rheumatic heart disease, hepatitis, cirrhosis, and diabetes. The commonest gastrointestinal malignancy is hepatoma, possibly related to the prevalence of hepatitis B and cirrhosis, aggravated by the widespread consumption of peanuts with possible aflatoxin contamination. Coronary heart disease, diverticulitis, and inflammatory bowel disease are rare. "exotic" diseases. Gonorrhea and syphilis are common — but generally are treated on an ambulatory basis.

The Panga (a local machete) and the automobile are responsible for much of the trauma seen. Uganda has a death rate of 108 per one hundred million vehicle miles as compared to eight for the United States. This, in fact, was the greatest health hazard to the MGH expatriates — but we all returned intact.

Becoming familiar with a different disease spectrum was not the only adjustment we had to make. Accurate laboratory facilities are limited to the basics. It was a pleasure to rediscover the joys of physical diagnosis and clinical judgment, and to know that physicians really can do a creditable job without daily electrolytes, radionuclide scans or ultra sound!

In addition to our teaching and supervisory responsibilities on the medical wards, each of us held a weekly consultant's clinic where together with our African colleagues and a cadre of interpreters, we had our own direct patient care responsibilities. As time passed we each took on a certain number of "private patients" too.



Left: The Mulago Hospital and Makarere Medical School. Right: Dr. Foster (on his knees) and colleagues on ward rounds.



Although there was perhaps a lack of depth, there were dedicated and talented people available representing almost all of the medical and surgical specialties. Even in the face of limited resources, a high quality of medical care was feasible as well as a considerable amount of clinical investigation. The Makerere University Medical School and the Mulago Hospital have been well represented in the East African Medical Journal and in publications in the United Kingdom and in the United States.

The postgraduate program

In the late 1960s the process of Africanizing teaching and consulting positions was slow moving. Each year a very small number of Africans went off to the United Kingdom to earn their MRCPs. The senior faculty and the senior consulting positions not only at Makerere but at the other regional hospitals were still held largely by expatriates, mostly from the United Kingdom. and Asians. With this in mind the postgraduate program was launched, under the leadership of Dr. Parson, to train the teachers, investigators and consultants, for Uganda and East Africa, to replace the expatriates at a quality level.

The ministries of education and health in Uganda, Kenya, and Tanzania approved the concept of an East African higher degree that would be the equivalent of the MRCP. Initially the program was to include candidates from all three countries, but after the first year it became an exclusive Ugandan program as Kenya and Tanzania went on to develop their own medical schools.

After a rotating internship and a period of "up country" service as medical officers, the more promising students

were selected as senior house officers. The three year program consisted of gradually increasing responsibilities not only for direct patient care but for the supervision and teaching of other house officers and students. A period of time was spent rotating through the medical subspecialties and each candidate was required to have a research project and to write a thesis (many of which were published). All of this was carried on under the close supervision of the senior medical faculty; much of our time was spent in this endeavor. There were programs in surgery and pediatrics as well as medicine - but medicine was launched first and had the largest number of candidates. At the end of three years a series of written and oral examinations conducted by the faculty at Makerere along with an "external examiner" led to the M.Med., E.A. degree (master of medicine, East Africa).

The program encountered a certain amount of resistance. Some of the talented young students hated to give up the prospect of a recognized degree from the United Kingdom for an untested program. There was resistance from Ugandans with hard-won MRCPs to dilution by a "cheaper" degree. There was resistance from some of the expatriates who felt that proper standards would not be met. There was also resistance to the innovation of extending some working days beyond tea for case presentations, pathophysiology reviews, and journal club. The British tradition dies hard.

But resistance was overcome and the assets were obvious. The scientific basis of medicine is the same in London and Kampala — but the applica-

tions are vastly different in a country with limited resources and different problems. Developing the academic spirit and providing opportunities for patient care and teaching at home has distinct advantages in terms of both numbers and cost and relevant quality.

The first group of six graduated in 1970 and, in all, there have been nineteen graduates of the program in medicine during our tours of service. Currently seven have faculty positions at Makerere University, two at the University of Nairobi in Kenya, two at the University of Dar-Es-Salam in Tanzania, and one at the University of Rhodesia. One has had further training at the National Cancer Institute in Bethesda and is doing a heroic job as director of the Uganda Cancer Institute. Two are directing the tuberculosis program for Uganda. One is a consultant at an upcountry district hospital. Two Asians who were in the initial group now have academic positions in the United States. As Dr. Parson wrote in a recent letter, "not a bad investment!"

Some reflections

Although our official roles were confined to the medical school and Mulago Hospital, we all learned much from our trips to the villages and outlying dispensaries. There overworked and often under-trained medical assistants, midwives, and other paraprofessionals labor to provide for the health needs of the people close to their homes in humble and simply equipped units. Underlying our experiences in Uganda is the dilemma: are the limited resources of this developing country best spent in the further development of a modern medical school and a pro-

gram to educate an elite group of consultants and teachers?

There is a valid point of view which states that medical services in a developing country should be organized from the bottom up and not from the top down. Greater benefit is likely to be attained at less cost from large numbers of suitably trained and supervised auxiliaries than from expensive hospitals with a multiplicity of specialists. Clearly more attention needs to be paid to the training of these auxiliaries.

On the other hand, this also requires teachers, supervisors, and innovators. Therefore developing the academic spirit is not irrelevant to the African scene. Makerere's medical school curriculum in the early 1970s increasingly emphasized the doctor's role as teacher, organizer, supervisor, and consultant to a team of auxiliaries along with the more traditional role of direct patient care. Even in a poor country, in the long run it is healthy to have some people working at the frontiers of knowledge. It is from this group that new ideas will hopefully be generated ideas relevant to the local situation. Thus the proper balance between investing in the "bottom" or "top" of the medical system is a major challenge to the educators and health planners of Uganda or any other developing country.

General Amin

A report from Uganda is not complete without at least a few words about the ebullient, unpredictable General Amin. Having been rescued from a seige of incapacitating gout at a time when his own position as Commander of the Army was in jeopardy, he soon after moved to overthrow the government of Milton Obote in a coup d'état in January of 1971. He was a charismatic figure and the change was initially a popular one especially among the Baganda who never forgave Mr. Obote for driving out their king. There were celebrations in the streets of Kampala, the constant beating of drums altered the usually quiet nights, political prisoners were released from jail, and there was hope that there might be a change for the better from some of the excesses and corruption of the previous regime. But the honeymoon was short-lived and the rest is history. Thousands of Ugandans



A house call

have fled and tens of thousands who found themselves out of favor with the General or his Army have "disappeared." There was the abrupt expulsion of the entire Asian community; colorful communications to President Nixon, President Ford, The Queen of England, and the United Nations; and the most recent threat to execute Denis Hills, a British school teacher and writer, for describing the General as a "village tyrant" in a yet to be published manuscript. Amin rules with his own peculiar blend of humor, tyranny and megalomania not unlike stories of African chieftans of generations ago. In the University, the effect has been apathy and fear of speaking out on any issue that might be considered even remotely political or critical.

Dr. William Parson's six year term as professor ended early in 1972 - and Dr. Schapiro departed with his family in June of that year. Dr. Parson's successor as chairman of the department of medicine subsequently fled to Zambia when he feared he was on the General's "enemy list." Late in 1972 Dr. David Barkham, a senior consultant in the department of medicine with twelve years of service to Uganda, and Sir Ian Macadam, professor and chairman of the department of surgery with twentyfour years of service to the country were expelled by the General for spreading "political gonorrhea." Dr. Sanchez's tour of duty coincided with this increasing unrest, and he, along with most of the expatriates, felt that the safety of his family dictated a hasty departure. Sending his wife and children on ahead to Nairobi by plane, he loaded up his land rover with his belongings

and drove alone across the border to Kenya — fortunately without incident.

The General has indeed Africanized all aspects of life in Uganda with the expulsion of the Asians and the departure of the expatriate community but able replacements are in short supply. The army and political favorites come first, and his policies have resulted in economic chaos. Educational and medical services have suffered disastrously. These developments illustrate all too clearly that some degree of political stability and responsible leadership are prerequisites for any progress towards improving health care or education in developing countries.

In the face of all this turmoil it is hard to accurately measure the accomplishments of the MGH's involvement at Makerere University and the Mulago Hospital. We would like to think that an impact was made and that it was a relevant and lasting one. Times are difficult in Kampala and there are shortages of almost everything. However, students are still studying in mud huts, classes are continuing at the medical school, and, as always, the beds at the Mulago Hospital are overflowing with patients on the floors. There is some comfort in knowing that there remains a sturdy band of African colleagues, former students, and graduates of the M. Med. Program who are on the line in patient care and teaching - committed to quality.

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Nutrition as a Function of Poverty in Apartadó, Colombia

by Rafael Amaro '76

During May and June of 1975, I worked at the Regional Hospital in Apartadó in the Urabá region of Colombia. During this time I had a chance to see how the nutritional status of patients, particularly pediatric patients, influences the course of clinical infectious disease. I also became aware of some of the social and cultural problems that contribute to the compromised nutritional state of a large proportion of the area's children.

The conditions I witnessed — the result mainly of too rapid a population growth and maldistribution of economic and educational resources — will not be significantly improved until largescale efforts are devoted to remedying the ills arising out of the rapid growth and social chaos which the Urabá zone has endured.

The region of Urabá is situated in the northwest corner of Colombia at the stem end of South America where the continent is attached to the isthmian backbone of Panama. Its tropical low-lands, which make up the greater part of the region, are excellently suited for

Rafael Amaro '76 took a leave of absence from his medical studies during 1974-75 and enrolled at the Harvard School of Public Health, from which he received a master's degree in public health this past June. Mr. Amaro went to Apartadó, Colombia through a program, involving both Colombia and Guatemala, administered by the department of nutrition of the School of Public Health.

banana cultivation and cattle raising, which are responsible for the vertiginous growth of the zone during the past fifteen years.

Its population is about 200,000 with a yearly growth rate of about nine and a half per cent. This is the result of the exodus of workers and migrants from the cities of Antioquia and other parts of Colombia, who hope to make their fortunes in this largely rural zone.

Apartadó itself epitomizes the frontier boom town atmosphere. In 1960 it had less than one hundred houses, today it is a vast swollen slum of muddy streets and houses without running water or latrines, with shoeless children everywhere. The town has dozens of noisy cantinas, several banks, and a town theatre. The main street is usually clogged with brightly painted buses and banana trucks whose drivers make the town their headquarters. There is no sewage system, and human effluvia freely enters the river system. The population has doubled in less than ten years, although it is said that the number of new arrivals is not what it was a few years back, when two new families were thought to arrive per day. This overcrowding, along with the humid tropical environment, the lack of adequate housing and sanitation, and the shortage of medical facilities, combine to create severe health problems in the region. Malaria is omnipresent one out of three persons surveyed were found to be carriers in 1964. More serious still are the intestinal diseases.

which constitute a large percentage of hospital admissions. A survey has shown ninety-two per cent of the people to be carriers of one or more types of intestinal parasite. The most common are helminths rather than protozoa. Protozoa are nevertheless prevalent and are associated with the fact that ground wells, rather than rooftop collectors, are used and are evidently contaminated. Approximately one out of ten persons tests positive for tuberculosis. The morbidity and mortality statistics of the zone are thought to be worse than the rest of the country, but are decidedly those of a developing region in a developing country. Infant mortality is about eighty per thousand births and the death rate below one year is about thirty per thousand.

ANTIOOUIA

The average family has five children and the average daily wage is slightly over one US dollar. Most families can barely feed themselves at that. Liquor consumption averages three liters/annum/capita, more than twice the rate of other areas of the country. Illiteracy is at least sixty per cent. Housing is at best inadequate, with seventy-five per cent recently having been classified as "turgurios" or slum dwellings. This is the social setting that breeds the clinical entities I saw in the hospital.



The regional hospital in Apartadó



"Apartadó itself epitomizes the frontier boom town atmosphere."

Typical everyday food items of the worker population (eighty per cent) are decidedly in the starch group: manioc, bananas and plantains, arepas (a corn-based pancake), aguapanela (raw sugar dissolved in water), and rice. Beans, eggs and meat are considered more as luxury items and may be eaten on a Sunday or as available, which may be once a week. The best food is preferentially eaten by the workers in the family. Children are thought to need less food and are fed a constant diet of the aguapanela, which they love. Aguapanela is preferred to milk, even by the farmer with a cow, who will sell the fresh, protein-rich milk to buy his wife and children the sugar blocks (panela).

A typical day's diet for the farmer will be perhaps two arepas (four ounces of corn) and café-au-lait for breakfast. At lunch he will eat fried bananas and boiled "yuca" (manioc) out of his lunch pail and drink aguapanela made that morning. In the evening there will be a one-dish meal, usually a soup of manioc, plantains and onions and spices with some small pieces of meat or chicken thrown in for flavor. This he eats with one or two arepas. Coffee and cigarettes finish the meal, and if he can afford it, a drink of aguardiente. This is usually not a sufficient intake of calories, and most of the people are very small and thin.

It is the lucky family that gets the above diet on a steady basis; lucky the children who can even eat this low protein diet from the time they are weaned from their mothers' breast. To compound the problem, many mothers wean their children early and feed them formula watered down to twenty-five per cent of

the usual strength, thus establishing a caloric lack early on.

Low birth weight is the earliest manifestation of the generally poor nutritional state. The twenty-six babies I saw in the hospital delivery room weighed an average of 2,700 grams — well below the average weight of babies in the US. Mothers do not consume special diets in pregnancy or take special care. Most do not see a doctor until they deliver, and then only about thirty per cent of births occur in the hospital.

The next nutritional problem, seen shortly after birth, is the "too frequent feeding leading to diarrhea" syndrome, which arises out of maternal ignorance and begins the downward spiral of calorie and fluid loss leading to increased susceptibility, leading in turn to infestations and infections. This syndrome, which takes so many of the infants in their first year, is an educational problem in which it is very hard to make headway.

Fully seventy-five per cent of the pediatric hospital admissions — there are about fifteen per week — are for "dehydration" resulting from gastrointestinal disorders, be they dietary, parasitic or bacterial. Most of the children are brought in with grade II or III dehydration due to parental patience or distance from the hospital. The mortality is high and averaged two out of the twelve or so cases of dehydration each week. The younger the children the higher the mortality appeared to be. This wastage can be attributed to the poor nutritional condition of the infants and children, which is also evident in the size/age relation seen on the wards. About forty per cent are below the tenth



Rural housing in the Urabá region.

percentile line on the height and weight charts.

Many of the children with GI-nutrition problems become repeaters, returning for nutritional therapy every one or two months or more often. There also appears to be a familial clustering of these nutritional disorders, sometimes with two or three or more of the children from one family in the wards at a time. There are families who always seem to have an infant being rehydrated and receiving nutritional therapy.

Hospitalized children aged five to twelve show a different nutritional problem, which is present in the majority of children in that age group who are hospitalized for any reason. This condition, never forgotten once seen, is marasmus or Protein-Calorie Malnutrition (PCM). PCM is the genre and marasmus the extreme, but the full range is seen at the Apartadó Hospital. The children with outright marasmus are the ones with the heavier parasitosis and the deadlier infections, usually bronchopneumonia. They are unforgettably thin, with a protuberant belly and no subcutaneous fat on their bodies or faces so that the bones show and their faces have a monkey-like appearance. Individual cases can be very dramatic and sad. I very well remember an eight year old girl, Carmen, who was one of my first patients on the ward. She came in to our emergency room with knots of ascaris palpable on her huge belly. Her body was a bag of bones and skin, her extremities thin sticks. She weighed twenty kilograms and was 105 centimeters tall. Her face inspired sadness, but there was a fighting gleam in her eye. Our treatment included nutritional and rehydrative





Young boy with third degree malnutrition and severe anemia: before and after hospitalization.

support as well as piperazine for the ascaria. On her third hospital day she began passing the worms by mouth and rectum. We recovered more than two kilos of the helminths over the next two days. She appeared to be over the worst on the evening of the sixth day, when shortly after afternoon rounds Carmen rolled her eyes back and stopped breathing. She died in spite of all our efforts at resuscitating her, a victim of the results of ignorance and poverty.

For every disaster like Carmen there were scores who did not die right away, but whose losing battle with infection and malnutrition assured, at the very least, less than full development of physical and mental prowess. In the streets of the town there were at least a score of children for every one hospitalized who suffered the same fate but perhaps to a lesser degree. There was some evidence of this subclinical infestation when routine stool exams were run on children of mothers who came to the outpatient department. Close to one hundred percent had stools positive for multi-parasitosis of protozooanhelminthic nature.

Another nutritionally caused condition I saw routinely was iron deficiency anemia. No child I saw on the ward in two months had a hematocrit above twenty-eight per cent and findings of twelve to fifteen per cent were common. Good response was usually obtained with ironfolate therapy. Since laboratory analysis in the Apartadó Hospital is extremely limited, most of our observations were of a clinical nature.

Another very noticeable problem was the bad dentition evidenced by most children, who had much tooth loss and decay at an early age. This is no doubt aggravated by the custom of drinking aguapanela regularly and preferentially from infancy, and the accompanying low milk intake. Most adults above twenty-five have many teeth missing, and by their early thirties many have prostheses, which are cheap and easy to obtain.

I have described the pediatric problems that impressed me most during my time at the Apartadó Hospital. They are all very frustrating to treat, as one realizes that the underlying causes will not be cured medically. As you manage to restore one child, ten more like him come. The doctors there, nevertheless, day after day, year after year, continue their interminable and at times heroic labors, and learn to live as best they can with the frustration and defeat of dealing with something that is beyond their control. It was inspiring to me that at no time was there any suggestion of callousness among the doctors; all the problems were approached with vigor and positivity.

I have focused primarily on children because they are the future of a country, and because adults in that setting really are a selected population sample — they are the ones who survived, although the effects of malnutrition do show in them too as evidenced for example by the high incidence and prevalence of tuberculosis.

The general social picture in the region is one that I had been told existed, and whose causes had been explained to me; the difference between now and before I went to Colombia is that now the awareness is in my bones and my soul. I am also much more aware of the

magnitude of the effort that will have to be exerted by the government there and by caring organizations and individuals to remedy the situation. The experience in effect has been an inspiration to me and has made me wish to return to help as I may be able to. The mechanisms which I saw function to create the problems had been just words until I saw them for myself, or had them pointed out by the hospital staff, who were very aware of underlying causes and eager to share this painful awareness. To summarize, they were:

- · Poor infant feeding practices;
- Protein-, calorie-poor diets;
- Cultural dietary practices which are nutritionally maladaptive;
- Ignorance and lack of knowledge about food and hygiene;
- Poverty and maldistribution of goods, lack of food; and
- The synergistic effects of infection, ignorance and malnutrition.

These conditions have become worse and more evident in the Uraba zone, as they have in many places in Latin America where the population has grown so rapidly that the available service resources are taxed beyond the present capability of the government to revamp and expand in scope the organization of the health care services.

What is needed for the social salvation of the area is the building of an infrastructure that heals and educates and that cares about the people. Several of the zone's developers have, on their own, instituted programs of housing and health care, which are working for the segment of the population they employ — at this time, less than five per cent of the total. This still leaves the majority of the population unprotected, but these examples of infrastructure building should be incorporated into present government efforts intended to alleviate the social ills of the zone. The now trite-sounding conclusion is that the nutritional problems of the area need a socio-economic solution. The hard fact is that in the Urabá zone of Colombia that solution is not yet forthcoming, and much hard work and concerted effort, of which Colombians are capable, is needed before it comes about.

Learning the Ways of a Nepalese Medicine Man

by Marjorie LeMay, M.D.

Field research projects for scientists in various parts of the world are sponsored by a non-profit organization. Educational Expeditions International. Its funding and staff assistance come from participating laypeople who contribute a fee to work with a scientist — such as an anthropologist, archaeologist, or marine biologist — and to learn while lending a hand with the project. I arranged to go along with the scientists on an expedition to the sparsely populated Arun Valley in eastern Nepal for an ecological study of the flora and fauna and to identify and collect specimens for the natural history museum in Nepal and other institutions in the States and England. They hoped that their work would serve as a baseline study of the changes in this mountainous area as more people moved into it, and that Nepal would ultimately make a national park out of part of this region.

The Arun River begins in eastern Tibet and the southern slopes of the Himalayas. It meanders thru Nepal, joins other rivers, and eventually flows into the Ganges. There are comparatively few roads in Nepal and the majority of trails are too narrow and steep for horses. Most traveling is by foot and by small planes.

After spending two nights in Katmandu, the capital and main city of Nepal, we took a plane with all our camping gear, three Sherpas (guides), and a dog to Tumlingtar, a small village in the central, eastern part of the country near the Arun River. Katmandu lies about 4,500 feet above sea level and Tumlingtar nearer to 1,000 feet. Here the Sherpas found local men to carry our camping

Dr. Marjorie LeMay traveled through Nepal for several weeks during the spring of 1974. She is an associate professor of radiology at the Massachusetts General Hospital. gear and trunks that contained material for collecting specimens, and we started north.

The trail at times was rugged. Most of the bridges in the country are made by two ropes, chains, or wire cables stretched across a river. From these, parallel loops of wire hang and support either very narrow boards nailed together at each end, or split bamboo poles, on which the pedestrians cross. Seeing porters cross with heavy loads gave me fortitude to proceed. The dog, however, would not, so we put him in a back pack and carried him across.

As we climbed higher we passed through subtropical forests where the trees, mainly oak, were covered with moss in which ferms and flowering orchids and small rhododendrons were growing. We collected ferns and pressed them for later identification; one day we collected over forty different specimens. We passed many small Buddha shrines and on some of the mountaintops there were tall poles on which were small white flags inscribed with prayers. It is believed that as the

flags are blown by the wind, the prayers are carried into the valleys.

We passed through a few villages of ten to twenty houses and some of the inhabitants came to us for medical treatment. This was because we were foreigners and not because the porters told them I was a physician. The common complaints were toothaches and infected knife wounds. Since the homes in the country have no running water. washing does not seem to be commonplace, which helps account for infections of so many wounds. Practically all of the small children, including infants. had mud caked on their faces. As I looked at the infected wounds I tried to stress soaking them in clean warm water — there is little soap in the country — and gave them the Bacitracin ointment and Band-Aids I had - but soon I ran out of all these supplies. Many of the people had poor teeth and I quickly ran out of aspirin too. In a country of about eleven and a half million people there are only seven dentists. In Katmandu there is a small Toothache God statue and some men cluster nearby who offer to pull out a painful tooth if prayers do not suffice.

The most impressive treatment I saw was given by Lalabar, a medicine man at our base camp in the north. Lalabar was an intelligent Sherpa who had been taught "medicine" by his father, who in turn had learned from his father and so forth. One day a porter complained of a headache and backache. He was not running a fever and all I could suggest was aspirin and rest. But Lalabar made the symptoms van-







Left: One of many bamboo bridges, part of a main thoroughfare. Right: A street pharmacy in front of a temple in Katmandu selling various herbs, snake skins, bird beaks, and even ground up pearls to regain youth.

ish. For treatment he gathered a few stalks of a rather small plant, held them in the fire for a few seconds and then brushed them up the patient's bare back, out the arms, and up the cervical region to the head. Next he took his large khukri (a large curved knife about twelve and a half inches long), warmed it in the fire and then moved its broad side upward along the man's spine and onto the back of the head. Lastly, the plant stalks were tied together, waved around the patient's head to collect the bad spirits and then were thrown, with the spirits, into the fire.

In the evening while Lalabar and I discussed our profession he gave me two short pieces of stems or roots of plants that he had gathered in the woods that day for treating ill people: one was the root of a plant, looanglahara was the Nepalese name, which he said should be powdered and mixed with some water and used for cuts. The other specimen was a root of a vine that one could take by eating small chips from it, or powdering it to make a solution. It was helpful for stomach ailments, and in removing rust from a pan.

After only a few days at the base camp it was time to begin our journey back to the airstrip at Tumlingtar. We had taken six days to reach the camp. This was longer than usual but we had gone around some of the mountains instead of over them and it was necessary to make detours because of washed out bridges. The head Sherpa, Gami, and three porters came with me — or rather I with them, and we went back over the

mountains. The first day we left the camp, which was at a 4,000 foot elevation, and climbed up a scree to a plateau at 9,000 feet where we walked through a forest of different varieties of rhododendron trees, thirty to sixty feet in height, all in bloom. There were many wild flowers including jack-in-the-pulpits three times as large as those in New England woods. The ground was carpeted with snowy white strawberry blossoms. As we descended, the berries were fully grown and ripe. One day I nearly made myself sick on wild strawberries and raspberries but luckily I was not hungry that night. It was raining lightly and we shared a bamboo shelter with a local farmer and his son. two buffalo calves, two cow calves, and two sheep. I watched the men at their meal but did not need to share it.

Our food and drink during the trip would not have excited a gourmet. Besides pancakes with peanut butter and jam we had rice with local mushrooms, curried potatoes, and an occasional chicken. The porters' meals were mainly dhindo — cooked mush made of millet, corn, or barley flour with water, which looked like wet cement. The men ate with their fingers. Their metal plates were washed by placing a cup of ashes onto the plates, rubbing with a moist leaf, and then rinsing with water. The pan in which the dhindo was cooked was cleaned by taking a burning log from the fire and flicking its burning end into the pan. Ashes and splinters of charred wood fell into the pan and the wood fragments were used to scrape the dhindo.

The beer of Nepal is called chang and is commonly made from ground millet and fermented in a closed wooden pail. (One of our patients at "evening clinic" had some cervical nodes and she volunteered the information that she noticed them to be especially painful when she drank chang!) The chang is distilled to make a beverage, Rakshi, which tastes like a twenty to one martini. To do this chang is poured into a clay pot and placed over a fire. A second clay vessel with numerous holes in its base rests on the pot containing the chang. On top of the higher pot a funnel-like metal or glass cone is placed containing cold water. Vapor from the chang rises and hits the funnel-like structure and forms droplets of Rakshi, which then drip into a vessel placed underneath.

The three porters who accompanied me were two boys about twenty years of age and the father of one of them. They all wore red beads and earrings. Pasang, the father, had a red earring on his right ear and his left ear had a hole with a string hanging from it. At the end of the string was a small piece of rolled paper. When asked about this he said that the local lama had given it to him and that it contained medicine. He could not recall what the medicine was supposed to treat, but thought it would help him. The Sherpa told me he thought it might be garlic. Garlic, I was informed, had many medicinal uses. It is interesting to recall that not long ago in areas of our own country pieces of garlic were tied on a string and worn about children's necks during the winter

as a protection against colds. A palm leaf manuscript, an important source book for early Indian and Nepalese medicine, was found some time ago in eastern Turkestan called the Bower manuscript after the man who realized its worth, bought it, and gave it to the Bodelian Library in Oxford. It is thought to have been written in the fourth or fifth century A.D. and advises the use of garlic for patients with tuberculosis and neck nodes and also for hanging on a door by a thread to stop the spread of infectious diseases.

On the evening of the second day on the way back from the base camp, we came to a rest area where a man came up to us. He was from Lalabar's village and had been sent to give me more local medicine. The new specimens were wrapped with a piece of paper on which was written the illness for which each one was to be used. But I needed to find out what the plants were. Upon returning to Katmandu I found a book, Medicinal Plants of Nepal, and learned that the leaf of Caster seeds could be applied to the head for relief of headache or as a poultice for boils and that cucumber seeds could be used as a diuretic, but the book was of no help in identifying the items in my pharmaceutical treasure trove.2 There is no medical school in Nepal (there are approximately 350 doctors in the entire country), but I visited the department of medicinal plants at the University. They were unable to help with the identification of my plants but suggested I visit the Ayurvedic Institute.

Ayurveda is the science of longevity and was taught to some early sages of India by the gods. It includes the use of charms and magic as well as the use of drugs. Two important sources of Ayurvedic medicine, dating from pre-Christian or early Christian days, were the Charaka Samhita and the Susruta Samhita. The former gives descriptions of diseases and methods for treating them, while the latter was the main source of surgical information in ancient India and had some impact upon Western medicine as well. It described even at that time operations on cataracts, bladder stones, and the restoration of a mutilated nose by plastic surgery.

The medicinal use of minerals, especially mercury and sulpfur, was introduced later by the eclectic religious

movement called Tantrism. It was claimed that minerals preserved the body from decay. These two metals, according to the amount and manner in which they were used, were regarded by alchemists as the source of all other metals. A story concerning the Tantric belief about the origin of mercury is of interest. One time the god Shiva and his wife were engaging in such violent and lengthy intercourse that other gods objected and sent Agni, god of fire and a messenger of the gods, in the shape of a pigeon to suggest that Shiva and Parvata control somewhat their basic instincts. When Shiva saw the pigeon he desisted but was angry and took his semen and threw it at Agni who, unable to withstand its force, jumped into the Ganges. The river objected and its waves threw out the semen, splattering it onto the ground to become five different kinds of mercury.

With the help of my Sherpa guide, who had returned to Katmandu to pick up supplies, I found the Ayurvedic Institute and its director, Dr. Ram Misra. He was an intelligent, young doctor who had received his degree from Banaras Hindu University in India after spending five years studying Ayurveda and modern medicine. He told me that the Ayurvedic Institute in Katmandu is a branch of Tribhuvan University, named after the present king's father. It has twenty-five beds, an herbal garden, and laboratories. The Institute accepts approximately thirty students a year who then spend three years there learning basic medicine and how to prepare the drugs and treat patients.

Dr. Misra called in two of his colleagues to aid him in trying to identify the specimens Lalabar had given me and to explain their preparation and uses:

Spe	ecimen	Use according to Lalabar	Opinion of Ayurvedic Institute	
1.	part of a vine	cuts	?	
2.	dry stem of plant	cough	a mushroom ? type	
3.	small pieces of dried musk deer meat	diarrhea and vomiting	dried musk deer meat	
4.	hair of musk deer	low altitude sickness and weakness	deer hair	
5.	dried leaves	fever	plant with small flowers that causes hay fever. Institute also uses it for fevers	
6.	dried leaves	nose bleeds and snake bites	?	
7.	root of a plant	cuts, debility and to increase potency	root of a plant called panch aunle — means five fingers because root has five pro- jections. Is exported for medicinal uses.	
8.	hard black stone	cuts — especially for babies	Nepalese name is Shilajut — an unpurified mineral found in the mountains. Used for cuts, also GU infections, and to dissolve urinary stones.	
9.	hard material	vomiting	sap of a pine tree — dried. Useful against vomiting.	
10.	oily material	headaches	made from stamens of white flowers of a Virburnum car- difolium tree	
11.	dried root or stem	cuts	Nepalese name is laonglahora vine	
12.	root of plant	stomach ache and cleaning rust from pans	Kutki. Good for infectious hepatitis. Hepatitis also responds to oxide of Fe and they have never lost a case.	

We found nothing out about the medicinal use of musk deer meat or hair (specimens #3 and #4) but considerable use has been made of the secretion of this deer. At one time musk was in the pharmacopoeia of both the East and the West. In the latter part of the nineteenth century it reportedly sold for four times its weight in silver in the far East. Its medicinal use in Europe had declined by the last century when it was stated that, in Sicily at least, it was used only as a "medical viaticum" (when the doctor had given up hope of saving the patient).³

Specimen #7 is listed in Medicinal Plants of Nepal as Orchis latifolia and labeled as a tonic. Specimen #8, Shilajut, is described in the Susruta Samhita. There it tells that ten grams taken daily enabled the user to live to be one hundred years old without disease or decay. Marco Polo described seeing Hindu ascetics in China who ate very little but lived to be 150-200 years of age due to a potion of sulfur and silver drunk twice monthly beginning in childhood.4 Shilajut is listed in Jaggi's Indian System of Medicine as helpful in leprosy, epilepsy, elephantiasis, tuberculosis, and hemorrhoids and as a solvent of urinary calculi.5 The Western name for specimen #12 is gentian. According to Pliny it was named after Gentices, king of Illyria, who was the first to discover its medicinal properties.6

Each specimen is prepared in a specific manner. Usually they are ground for a certain number of hours with another substance such as honey or milk, then the pot containing the material may be wrapped with a specified number of layers of cloth and moistened earth, and heated at a given temperature for a stated number of hours. The process may be repeated as many as 300 times or more. Mercury, during its preparation for medicinal purposes, turns into red granules (mercuric oxide?) and is used in well persons experiencing weakness and sudden collapse and sick persons in the acute stages of typhoid and tuberculosis.

Lalabar also told me that there is a rather rare red snake in Nepal, about three feet in length, of which he cuts off the head and two inches of neck, taking the blood from the rest of the body and putting it in a bottle for immediate use or on a cloth. Boiling water is poured over

the cloth to soak out the blood when needed. It is used for rashes and itching.

Before returning to Boston, I spent six days in Katmandu, rented a bicycle. which is the easiest way to get about in the city, and visited two hospitals. There are four radiologists in Nepal: two are in Katmandu. I met one, Dr. Maskey, who received his medical degree at a school in Calcutta and his training in radiology at London Hospital. He has a private office and does the radiology for the Bir Hospital, a 300 bed primarily surgical hospital, and sees about fifty patients a day there. His late afternoons are spent at Shanta Bhawan Hospital, a 135 bed United Mission hospital staffed with international and Nepalese physicians. Dr. Maskey told me that tuberculosis, chest and bone, is their greatest enemy. He commonly sees bowel and biliary obstruction from ascaris, elephantiases, echinococcic disease, leprosy, chronic pulmonary disease, and rheumatic heart disease. I asked about amoebiasis and he replied, "Oh, we don't even consider that a disease here." Both goiters and malaria are common in the low southern area of the country. US AID and WHO personnel have helped with mosquito control in Nepal, but it has resulted in more farmers moving into the previously infested areas, and some cases of chloraquin resistant strains have occurred.

Nepal has allowed visitors into the country only since the 1950s. Until then a wealthy family ruled that discouraged education and travel by natives. Schooling was not free then and it is still not commonly free now for many children. Even at present the literacy rate is probably less than ten per cent. Present statistics show that the rate of literacy in females, for example, doubled in the past year — from one to two per cent.

The Nepalese people are charming and friendly. Katmandu is extremely dirty — once beautiful shrines (Katmandu means wooden shrines) are now crumbling. When I was there on my birthday, May 6th, there were festivals because it was also reputed to be Buddha's birthday. Buddhism and Hinduism are intertwined in Nepal. Pashupatinath, a temple situated near the outskirts of Katmandu along the sacred river Bagmati, is the most holy



Tangled wires in Katmandu

place of the Hindus. It is mainly a Hindu shrine, but festivities were taking place there on Buddha's birthday. Many Hindus go there when they are dying and have their bodies cremated. It is believed that anyone who visits the shrine will not need to be reincarnated. Though I will not now require reincarnation, I would like to revisit Nepal.

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Beirut, Lebanon October 2, 1975

by Samuel B. Kirkwood '31

This is actually a letter from Beirut. Which might seem unusual to those who have seen recent television pictures or have read the reports in the news. Sadly — tragically — these have been all too accurate, for the loss of life and injury have been considerable and the destruction unbelievable. But to understand all that has happened takes more than news reports and pictures; it is not easy even for those of us who have lived here for years and have seen the events of the recent past. I cannot attempt to communicate the depth of the turmoil here in this letter. nevertheless one comment I must make: Lebanon is a fantastic laboratory of democracy.

It is such an old land that it has known every kind of rule, almost all styles of living, an incredible mixture of people and races, and a continuous existence as a major commercial center of the world. It is a land of beauty, of mountains and valleys, and sea and littoral plains. Perhaps fortunately, it has no oil or mineral wealth. It is not large enough to be a major agricultural country. This and its geographic location have forced Lebanon to look outward throughout its history. It has always been cosmopolitan. Untold ancient art lies buried underneath its sands; and today its young people are trying to create their own concepts of new art forms.

It is such a new land — it was born (I am still an obstetrician at heart) on November 22, 1943 — that it is beset by all the typical problems of recent nations trying to arrange traditions into a

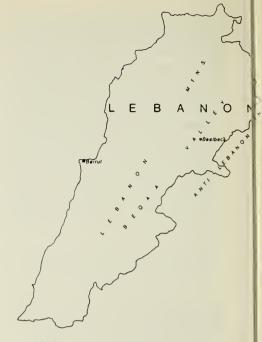
Samuel B. Kirkwood '31 has served as president of the American University of Beirut for the past ten years, prior to which he was dean of the Faculty of Medical Sciences at AUB from 1962-1965. He still lectures in the School of Public Health there.

contemporary pattern: a basically ancient culture, two main religions, many confessional faiths, several languages besides the official Arabic, and an economy and intellectual life dependent upon being at a crossroad of the world.

It could be asking too much for these matters to be resolved in thirty-two years. In this perspective, factional struggles may be temporarily unavoidable, but it must be hoped, not ultimately inevitable. Tragic though this present confrontation is, Lebanon may be able to work out some mechanism or formula that will establish a workable democracy. If it can, Lebanon will have made a contribution to democracies everywhere.

One of the curious paradoxes of modern cities is that civil disturbances, even ones involving widespread destruction, can be highly localized. At the American University of Beirut (AUB) we have been touched, while other parts of the city have suffered severely. Fortunately the churches, colleges and universities, and hospitals for the most part have not been damaged. Our region of Ras Beirut, in the northwest sector of the city, has escaped any major conflict.

Our life, of course, has been affected. The most serious handicap in these critical times is that many of our staff are unable to leave their homes if they must cross the active areas to reach the University. But for most of the essential functions, normal routines continue or substitute ways and means are found. For instance, a courier — friend or staff member — took this letter to New York and mailed it there, for the Beirut Post Office is operating quite irregularly at the moment. Anyone going to Europe or the United States willingly carries mail. In better times the Postal Service will be restored to its international standards. Meanwhile, a much more



sophisticated communications system, the telex, has operated during all of the unrest. This is characteristic of Lebanon. It has great resources, in the deep and simpler past as well as in the more complicated present and future.

What I am trying to say is that Lebanon still responds to its remarkable vitality. It has been involved, for the most part unwillingly, in the wars of other nations whose armies have swept over the country from north to south and east to west. But there are times of peace in which its Begaa Valley — the Biblical Land of Milk and Honey — produces some of the best grain and fruit in the world, and its people turn to their studies and their discussions of philosophy, religion, history, and politics. No finer conversationalist lives than the Lebanese villager in his evening conclaves. More than many other nations Lebanon values education and no people I know are more proud of their village origins.

In this respect, it is not difficult to operate a university in Lebanon, even in such disturbed times as these. Of course, I recognize that the conduct of a university anywhere nowadays is an unusually complicated task. However here in Lebanon and the Middle East there is such an avid desire for a higher education that in the end this motivation supersedes all but the most incapacitating of political circumstances.

About our students. They represent seventy nationalities, and fifteen faiths.

Eighty-five per cent are from Arab countries, five per cent from the United States, and the remaining ten per cent from countries throughout the world. We admit one out of every two to four applicants, depending upon which of the four faculties is chosen: arts and sciences, medical sciences (medicine, nursing, pharmacy, and public health), agricultural sciences, or engineering and architecture. All courses are taught in English therefore all of our students are at least bilingual and many speak French as fluently as English and Arabic. In addition, Armenian students have their own language. Students read for the bachelor's degree, the master's, and in six of the departments, for the doctor of philosophy.

Beirut. In all respects the College had become a university; its basic concept and educational methods remained American, but it was of Beirut and the Arab lands, not merely in them, a significance that must not be lost.

Our program is implemented through three major divisions: undergraduate, graduate, and extension. These are not three strictly independent divisions; they overlap and are carefully coordinated. Because we have unusual opportunities through our status as a private, unaffiliated university, we place an emphasis on our graduate work. The undergraduate years, of course, still form the basis of our educational efforts. Moreover we are trying to develop

oratory in teaching. We are pleased with these indications that our efforts over the years to bring American concepts of teaching have gained some acceptance in the Middle East.

The School of Medicine was founded in 1867, one year after the University opened. Due partly to the English lanquage requirement, which brings us a group that has already had a certain amount of additional training, we have an unusually good choice of applicants. Each medical class of sixty is chosen out of 115 premedical students who in turn have been selected from some 200 who have completed their sophomore year of science. This is far from the ratio Harvard Medical School enjoys, but we obtain a caliber of student who has made good in the United States, the United Kingdom, and all of the Middle Eastern countries. Look around you in Boston and you will see many of our graduates. I have always admired our students who far too often have had to study in the midst of highly unfavorable conditions. Without a remarkable selfdiscipline the Arab student would find it impossible to pursue his work to any satisfactory degree. The rest of the world has called the Arab undisciplined. It is an unfair accusation. Yet if there is some element of truth in the characterization, those who makes it as a critical generality first must be sure that they are sufficiently familiar with the people and the lands to know and feel as the Arab does. Certainly one of the driving forces within our students is the feeling that they must prepare themselves for a future role in the development of their respective countries.

Despite these intentions, we have had our student problems not unlike those that marked the last decade for schools everywhere. Although anti-Establishment feeling was the common element, the basic motivation for us was political. Anti-Americanism was a convenient rallying cry for some, but the local and regional differences are the deep roots of the discord. As a University of 5,000 young people who are but a few short years away from partisan and community political responsibilities themselves, we have on campus the emotional and intellectual representation of almost every political party and ethnic group in Lebanon. To follow our belief in the American type of education we must recognize that students are



The new medical center. The forward part is a 450 bed hospital, while the connecting wing contains the administrative offices and research laboratories of twelve medical departments, private clinics, and an outpatient department.

We are a private university, registered with the Regents of the State University of New York, Our charter is dated 1863 and the first class took place in 1866. The Syrian Protestant College, as we were incorporated, evolved from the missionary activity of the mid-1800s. primarily of the Presbyterian and Congregational churches. Despite the regional clashes and World War I, the College grew. In 1920, the churches withdrew and the institution became nonsectarian. Its trustees felt justified by the expansion of the program to request an amendment to the charter changing the name to the American University of

learning — not teaching — concepts and methods that derive from an amalgam of our Western heritage and our Eastern experience for the best of both possible worlds. More recently we have begun to build an extension service that will add considerably to the flexibility of the program and particularly will provide a better mechanism for handling a continuous variety of consulting and advisory activities. Other schools long attached to other systems of education have begun to revise their organization to resemble our semester and credit type structure, and we have also seen a steady growth of the labalso citizens with the accompanying rights of free expression. What is too often forgotten, however, is that they have great and grave responsibilities. It is this aspect of student learning that has been difficult to align with the practical direction of constructive student action.

One of the great advantages of the American University of Beirut is that we are both a university and small. We can offer all of our students the breadth and depth of a university program, yet we have manageable numbers. While we cannot equal the faculty-student ratio with which we started in 1866 (eight faculty and sixteen students), we can and do strive to keep the more personal feelings of the liberal arts college. We are fortunate to have all of our buildings on one campus of about seventy-five acres near the heart of Beirut, including our 450 bed hospital. We also have a farm in the North Begaa, ninety kilometers away in the valley between the Lebanon and Anti-Lebanon mountains near the ancient city of Baalbek. This 250 acre installation is integral to our agricultural sciences program and serves the University largely as an experiment station and graduate training facility. Even this part of our campus is kept very much within the sphere of our total program as students and faculty travel daily to and from Beirut. The inclusive physical arrangement allows us to provide a more integrated program than can be given either on separate campuses or in larger institutions.

More and more, especially for us who serve a large segment of the developing countries in the world, it appears that the particular value of our graduates to their native countries is the breadth of a liberal arts background as well as a particular depth of specialization. We were happy recently to have this belief confirmed by an eminent professor of surgery in the United States who came several months ago to open the annual AUB Middle East Medical Assembly. He took as his theme the "humanist" doctor, and urged that in the future medical schools pay more attention to the non-science background of premedical students. We expressed our agreement with this idea by asking one of our young medical students, a pianist of professional ability, to play; he responded with Chopin. This should not be surprising in a city with a built-in Arab culture sitting on the periphery of the West. The Baalbek Festival of music, dance, drama, and folklore, held in the ruins of the ancient temples of Baalbek, is one of the major international summer events. We are fortunate in having on our own campus a series of stimulating cultural events throughout the year equal to those at any US campus.

But what of international medicine?

We are international medicine. But today this is true of every good medical school. However, we can take our heritage directly from the Isle of Cos which is not far away — an hour and a half as the jet flies. With financial help. principally of the US government's Agency for International Development (AID) Program to American Schools and Hospitals Abroad, we are just now completing the new buildings of our medical center including a hospital expanded to 450 beds. The staff is largely Arab and American. Most have taken their basic training at AUB. Almost all have then gone to the US or UK for graduate work. We have tried to organize a medical and health institution around the concept of total individualcommunity health. We teach and practice curative medicine, preventive medicine, and what we call "health production." Our School of Public Health is part of the Faculty of Medical Sciences. along with the Schools of Medicine. Pharmacy, Nursing, and the Hospital and University Health Service. Medical students mingle with students of economics, sociology, history, and may take courses in these subjects as part of their medical work.

We take a multifaceted view of international medicine. All people, wherever they may live, suffer from certain common diseases, and so we work on these as do other medical schools: hypertension, psychoses, cancer, obgyn abnormalities. There are, however, certain medical problems that are peculiar to our own region, and to these we pay special attention: schistosomiasis, echinococcosis. In one fattailed sheep we have a walking laboratory for lipid experimentation. Finally, the study of a medical problem of worldwide concern is the right and duty of any school anywhere. It is possible

that in our own research and clinical practice we might be able to develop a new drug, a new understanding of a physiological function, or a new concept of public health that could benefit the rest of the world. We may be more fortunate than other countries in having an acquaintance with certain problems or in having an unusual group of faculty specialists interested, for example, in various phases of the neurological sciences; there is a fantastic new idea being worked out in Saudi Arabia for nationwide provision of health care; and why could not the breakthrough in a cancer or coronary atherosclerosis come from the Middle East?

We are dedicated to serve the needs of developing countries. Though Lebanon cannot be classified as such, it is a land to which many of those countries have turned for help in the past. Lebanon is an intermediary for the efforts of outside agencies of world health. In the course of its own development Lebanon has both acquired and solved problems that typify situations elsewhere in the world. In the broadest sense there are two problems in international medicine that dwarf all others: the provision of optimum medical-health care to peripheral areas and of optimum nutrition to all people. Through our students and studies we encounter all levels and variations of these two major problems.

How do you apply the methods of Western medicine and public health to a country centuries older having a traditional concept of disease and therapy? Or do you? One of the most interesting and valuable medical discussions I have ever heard was in a seminar



Dr. Kirkwood's office (building in background) overlooks St. George Bay and the port area, with the Lebanese Mountains in the distance.



One of the ten operating suites which will serve the new hospital.

headed by a physician who at the time was the only professionally certified psychiatrist in his country, though he had an international reputation. The subject was "The Witch Doctor's Contribution to Mental Health Programs." The witch doctor, he said, has one unusual advantage over the psychiatrist: the native witch doctor comes from the same environment as his patients and sees them in the total context of their environment, in a way that no modern psychiatrist can possibly expect to do. If his potions do no harm and he can be supported with a medical service providing modern diagnostic skills, the witch doctor can become a helpful member of the modern health care service.

It is harder to realize the impact of a health program upon the economy of a developing country. While some of these countries have underdeveloped resources that will meet the expenses of such a program, more do not especially when such national income as is available must be apportioned for the development of schools, communications, roads, general welfare, and all too often, defense. What may seem entirely reasonable in one regard may be impossible in another. In one instance a health program was recommended that would have cost eighty per cent of the total national income! The choice of priorities is crucial and at present often must be made without adequate knowledge of the principles or the actual data involved.

The pursuit of optimum nutrition presents even greater problems. Much of the basic research in this area has been done, but ongoing studies reveal that a vast amount is still unknown: at one time vitamin A deficiency and blindness seemed to be a simple matter of replacement therapy, however here and elsewhere research indicates that this is far from correct.

Over the years our investigations of protein deficiency have led to understanding the basic biochemistry of bodily changes and to developing a protein supplement that, when added to the chronic undersupply in the usual diet, will meet nutritional demands. Yet even when the formula is one which utilizes local products, the family often lacks motivation to incorporate them in their diet and ready sources of needed nutrient are ignored.

A rather controversial finding of our research is that except in areas of specific deficiency the main problem is not protein alone, but a fundamental one of the total energy content of the diet — i.e., a protein-energy deficiency. Good nutrition is ultimately a state of total well-being, and the nutritionist quickly becomes a sociologist, economist, psychologist, educator, and geographer, as well.

Our nutrition research as not been confined to medical applications. A great advance in the fight against malnutrition was made when the famed Mexipak wheat came into general use. Mexipak was tried in the Beirut area with good yields as long as the fields were irrigated. Since much of Lebanon's land cannot be irrigated, Mexipak proved of less value than elsewhere. Therefore we have been developing a higher yield dry land wheat, which we have called Najjah. It is now undergoing field trials in several parts of the world.

Again, it is interesting to note the interdependence of everything. Because of the high yield of Mexipak, in many parts of the world acreage that was previously planted with legumes has been put into grain, a situation not entirely advantageous either to the soil or to human metabolism. Grain and legumes cannot be allowed to become exclusively competitive.

All of this adds up to the length, breadth, and depth of the problems we all face in international medicine or international education or international living. International is the key mode now, and AUB is in the exciting middle, to observe, to partake, and to contribute. How can a university be maintained in the midst of political conflict existing in its country and its immediate environs — with a student body that represents all of the various political factions? I believe it has been possible by strict adherence to the purpose of the university, which by definition cannot be partisan. As a university, AUB must be part of its world seeing and trying to understand the currents of thought and action surrounding it, but not becoming involved as a partisan political participant. Only then can it be available for all those who seek to learn. According to the laws of Lebanon and the dignity of a long university heritage, the policies that we follow are liberal enough to allow our students to evolve their own sense of learning and expression yet firm enough to point out to them that they must also learn to live responsibly within a community.

Lebanon is quiet as I am finishing this letter. There is a great love for this country by all its people, and those of us who have come here from other countries have acquired some of this same feeling. Lebanon has a purpose among nations and I believe the American University of Beirut has a purpose in Lebanon and the Middle East.

Egypt's Rx for Medical Education

by Farrokh Saidi '54

In March 1975 I visited Cairo and Alexandria, the two largest cities of Egypt, under the auspices of the World Health Organization. As I had been involved. over the past ten to twelve years, with all aspects of medical education in my native country, Iran, this was an opportunity to see how another Near Eastern country handled its problems in medical education. Although the Regional Mediterranean Office of the World Health Organization in Alexandria had been arranging for an exchange of medical faculty and health experts between Iran and Egypt for a number of vears, there had been little comparison of professional health standards. Therefore, everything I saw in Egypt was guite new to me. Accordingly, this report is as fresh in perspective as it may be fallacious in the interpretations it reaches.

At present, the outstanding feature of Egyptian medical education and medical care is the exceedingly large number of doctors being graduated from their medical schools. Some 35,000 medical students are currently enrolled in eight medical schools that together graduate a total of 3,500 physicians each year. This is an impressive number of graduates by any standards. These figures are even more remarkable when one considers that Egypt is technologically still a developing country.

How is it actually possible for eight Egyptian medical schools to turn out such a large number of doctors when some 120 medical schools in the

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United States deliver only about 14,000 doctors a year? The academic and health aspects of such a program would indicate that at least some of the following possibilities must hold:

- There must be a sizeable body of teaching personnel and medical educators available;
- The curriculum must be extremely well designed and its organization and efficiency must be superb;
- There must be tremendous enthusiasm on the part of both the faculty and the student body for teaching and learning; and
- The quality of the product, i.e. the competence of the physicians the system produces, must be rather low. A dramatic if not tragic sacrifice of quality for quantity must have been made somewhere along the line.

The faculty

Egyptian medical schools have one remarkable and commendable achievement to their credit: they have made themselves nearly self sufficient and independent of Western medical schools and teaching hospitals, by training their own teaching personnel and cadre of professionals. The Ministry of Higher Education of Egypt does send a few hundred advanced students abroad on full scholarship. Of these, some eighty to one hundred are in the basic sciences. But within the past few years three new medical schools - Zagazig, Tanta, Al-Azhar have been established and fully staffed with faculty members from the five other Egyptian medical schools. This attests to the fact that a self perpetuating mechanism for educating doctors and medical scientists has already become established in Egypt. While the ranks of medical school faculty may need support or augmentation in the future, they are definitely operational on their own. It should be noted that medical education in Egypt was started by Europeans in the last century and has been based on the Western model, with no traces of native or folk medicine.

To become a professor at an Egyptian medical school is the ultimate aim of all medical students in this country, but only the top five to ten per cent succeed. One reason for the attractiveness of teaching positions is that not only are faculty members exempted from the two to four years of obligatory rural practice, but the upper echelon is entitled to a private practice that augments their meager university salary. The basic sciences do not attract many candidates, but reasonable opportunities for research, salary compensation for lack of private practice, and other means are used as incentives.

An estimated 1,500 Egyptian doctors are currently practicing or teaching abroad, mostly in the United States or England. However these doctors are not part of the brain drain, as the faculties of Egyptian medical schools are not lamed by their absence. Neither are returning Egyptian doctors necessarily assured a professorship in Egypt on the strength of their academic position or credentials obtained abroad.

The curriculum

All eight medical schools — Cairo, Alexandria, Ain-Shams,* Asyût, Tanta, Zagazig, Al-Azhar,* Mansûra — have a uniform six-year curriculum that leads to the M.B.Ch.B. degree. First year courses include physics, chemistry, and biology, which are taught at the School of Sciences. The next two years are devoted to basic science subjects such as physiology, biochemistry, human anatomy, histology, and psychiatry, and are taught on a longitudinal basis. A transition period, the fourth year is also oriented towards the basic sciences — microbiology, pharmacology, pathology, and parasitology. The last two years are purely clinical with strong emphasis on didactic lectures. Before being allowed either to start a practice or pursue further specialty training, each graduate must pursue an obligatory rotating internship.

Students have one of four choices open to them for further specialty training. Those with the highest grades - no more than five to ten per cent of each class - are allowed to continue at the university and become either basic scientists or full-time clinicians. A very few directly enter private practice, some going abroad to America or England. Others join the Egyptian Armed Forces. But the majority — some eighty per cent - become employees of the Ministry of Public Health which assigns them as general practitioners to serve two to four years in rural areas. After that they are allowed to return to the universities to specialize in various clinical fields, but subsequently must return to the Ministry of Public Health to be employed as specialists in general hospitals of larger urban centers. They cannot continue in the universities as teaching personnel. After each twelve to thirteen months of service, there is a one month refresher course offered to all physicians.

There has been no serious consideration of reducing the total number of vears spent in medical school. Nor are there any plans to alter the overall curriculum. No doubt some overlap and inefficiency as well as irrelevant shortcuts exist. But students and faculty do seem to put in a good day's work. Laboratories, libraries, dissecting rooms, and hospital wards are always open to students. Classes are divided into two groups for lectures which, along with laboratory exercises, are repeated for both groups, each having what seems to be a manageable number of students

Lack of proper and necessary equipment is apparent. But such gross deficiencies are compensated to a large extent by the over-utilization of what is actually available. There is no question but that teaching hospital facilities are rather poor, laboratories under-equipped, and library facilities in-adequate. Specimens are handled by many students and cadavers are dissected down to shreds.

An important feature of Egyptian medical education is that all instruction is in English. This has become a well established custom and there is no evidence that some firebrand politician would succeed in imposing Arabic as the teaching language on purely fanatical grounds.

Student and faculty enthusiasm

Entry into an Egyptian medical school is contingent upon having very high grades in secondary school: no student with an average below eighty-six per cent in the final high school examination will be considered by the admission committee. Once in medical schools, competition is rather keen and all students are fully aware that their future careers depend in large measure on the quality of their performance during the next six years. Students do not have to be exhorted to work for good grades.

The enthusiasm and interest of the faculty is difficult to assess during a short visit. Given the very low salary it is difficult to comprehend why teachers should work so hard. Perhaps the student enthusiasm plus traditional motivation and, of course, good administrative supervision prevent occurrence of what would be a paralysing disinterest on the part of the faculty.

Quality

To say that quality of medical education in Egypt has not been affected by the present policy of graduating large numbers of doctors, would be unrealistic. But quality depends on such factors as the locale, the raw material available (the student body competence), and also the final aim of the entire undertaking. Some of the older faculty remember with nostalgia former days when each class was no larger than 100 to 150 students. When pressed, however, the same faculty members do not admit that the competence of the doctors they currently graduate is so low as to have become alarming. The impressive if not startling expansion of class size did not reach its present proportions overnight: it took place gradually over a period of some ten years, thus giving both the faculty and the administration a chance for slow and steady adjustment to the unwieldy number of students in each class.

^{*} These two medical schools are also located in Cairo.

At the moment, the real shortage seems to lie in the number of teaching beds. Granting that many other deficiencies exist, graduates of Egyptian medical schools have passed the acid test: those who have gone abroad for further training have been accepted at relatively high academic levels on the house staffs of English and American teaching hospitals. The Egyptian people themselves seem to appreciate the services of their doctors; one does not hear or read pejorative comments made about the medical profession, nor is there a medical disciplinary board in Egypt as yet. Most importantly, Egyptian doctors are in great demand in nearby Arab and African countries.

What is the purpose of the policy of graduating such a large number of physicians on an annual basis? Is it possible that the aim is to solve the problem of adequate health care for the entire population of the country - a feat that heretofore has escaped all other developing countries of the world? According to the Minister of Public Health, all available positions for general practitioners in the country have been filled. There is no further need for doctors in rural clinics or small hospitals or even in larger hospitals in urban areas. In other words, full health coverage has been totally achieved for all of Egypt, with a need only for specialists in certain fields. Secondary schools in Egypt graduate about

250,000 students each year. While the government obviously feels an obligation towards these young people in terms of providing them further educational opportunities, this also could not be the full explanation for the enormous expansion of the medical schools' capacities. The true explanation of the situation seems to be a controlled output factor, a situation that is unique to Egypt.

For the past ten years there has been a steadily rising demand for Egyptian doctors in neighboring Arab and African countries, and the greater portion of health care in these countries is provided by Egyptian doctors. The impetus towards exporting such manpower may have been politically triggered, but whatever the cause, there are currently some 5,000 Egyptian doctors practicing in all Arab countries except perhaps Lebanon. Compared to 18,000 doctors within Egypt, this is indeed noteworthy. For humanitarian and also perhaps political reasons, the government of Egypt feels that it has an obligation to supply the need of neighboring Arab and African countries for doctors. This foreign demand will predictably rise in the future, for although some countries like Saudi Arabia and Kuwait are creating their own medical schools, Egyptian medical schools will be in a good position to provide them with the required faculty members. There is a vast potential market for

Egyptian doctors on the African continent that has not even been touched as yet.

Egyptian medical students are fully aware of the available opportunities both within and outside of Egypt. Fortunately, Egyptian authorities have made sure that the level of competence of the graduating doctors is kept reasonably high, so as not to close a market to themselves.

This controlled output factor may seem too simple an explanation of why 3,500 doctors are added to the medical resources of Egypt each year. But still the majority of Egyptian doctors do not have to look for a productive career beyond a radius of only 1,000 kilometers from their home. This does not mean that many do not immigrate to the United States or England, but these do not deplete the total physician manpower available in Egypt.

To summarize, there are both financial and academic incentives for prospective physicians in the United Arab Republic of Egypt. The graduation of some 3,500 doctors every year by eight medical schools may not initially have been a well sorted out plan. But the fortuitous availability of an endless market for doctors outside Egyptian borders has become the main stimulus for the policy of educating such a large number. The faculty and government alike have taken full advantage of the availability of this market and have, over a period of ten short years, created the requisite administrative machinery and academic opportunities to allow such a system to become operational. Undoubtedly many administrative, academic, and above all financial problems of serious magnitude still hamper this program. But using a liberal frame of reference - a method that is permissible in all developing countries - one can conclude that the policy adopted in Egypt has been extremely viable.



Cairo street scene: marketplace and mosque.

